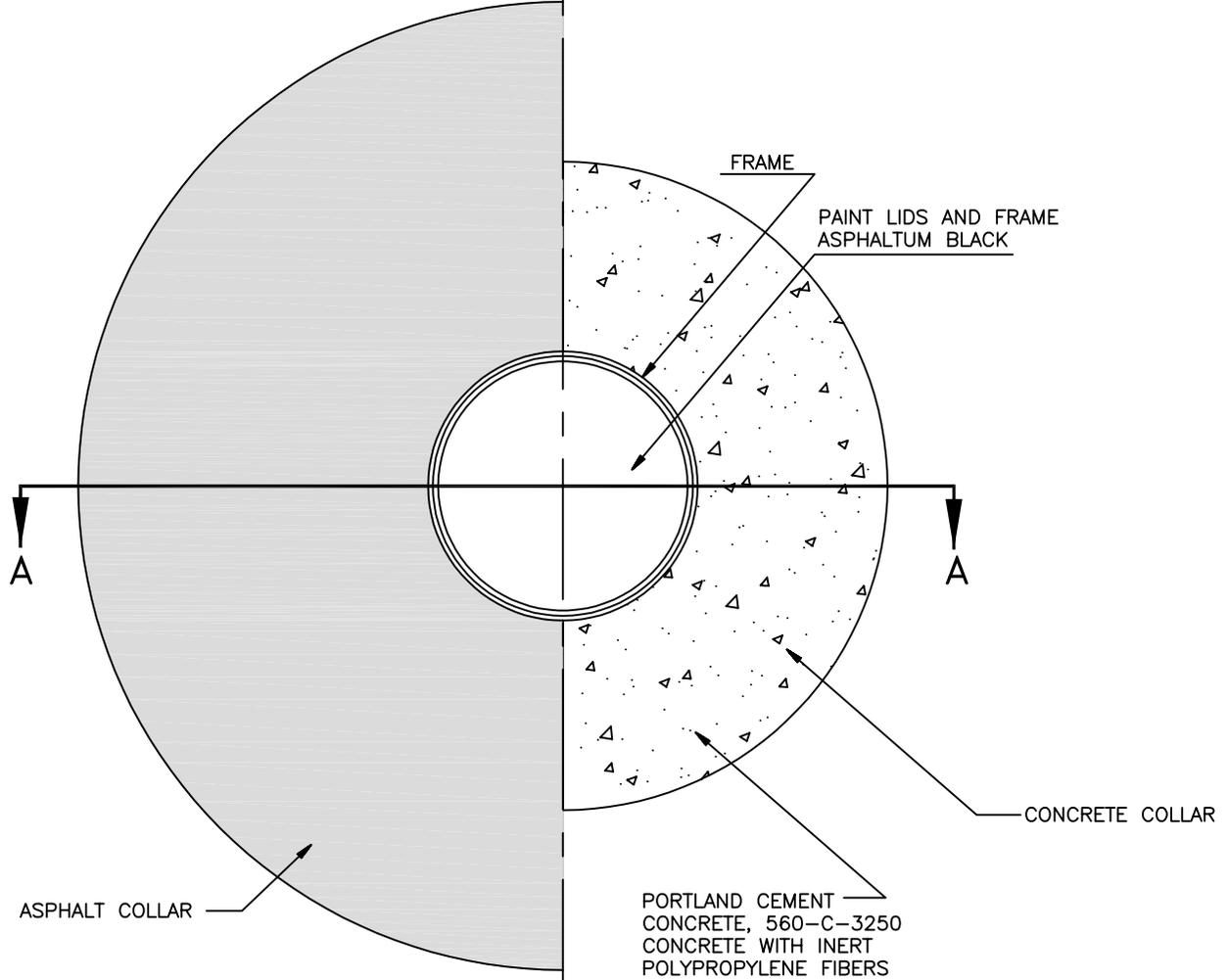
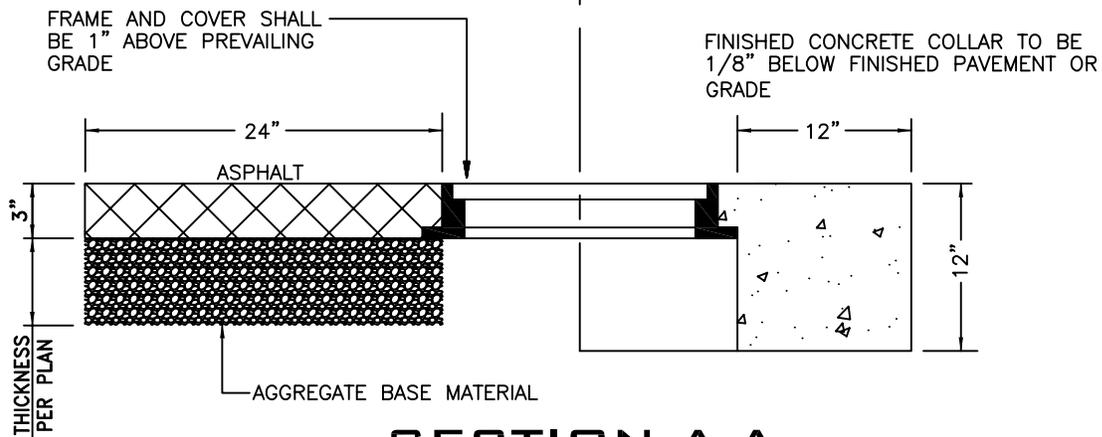


OUT OF PAVEMENT

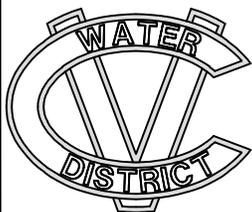
IN PAVED ROADWAYS



FRAME & COLLAR



SECTION A-A



COACHELLA VALLEY WATER DISTRICT

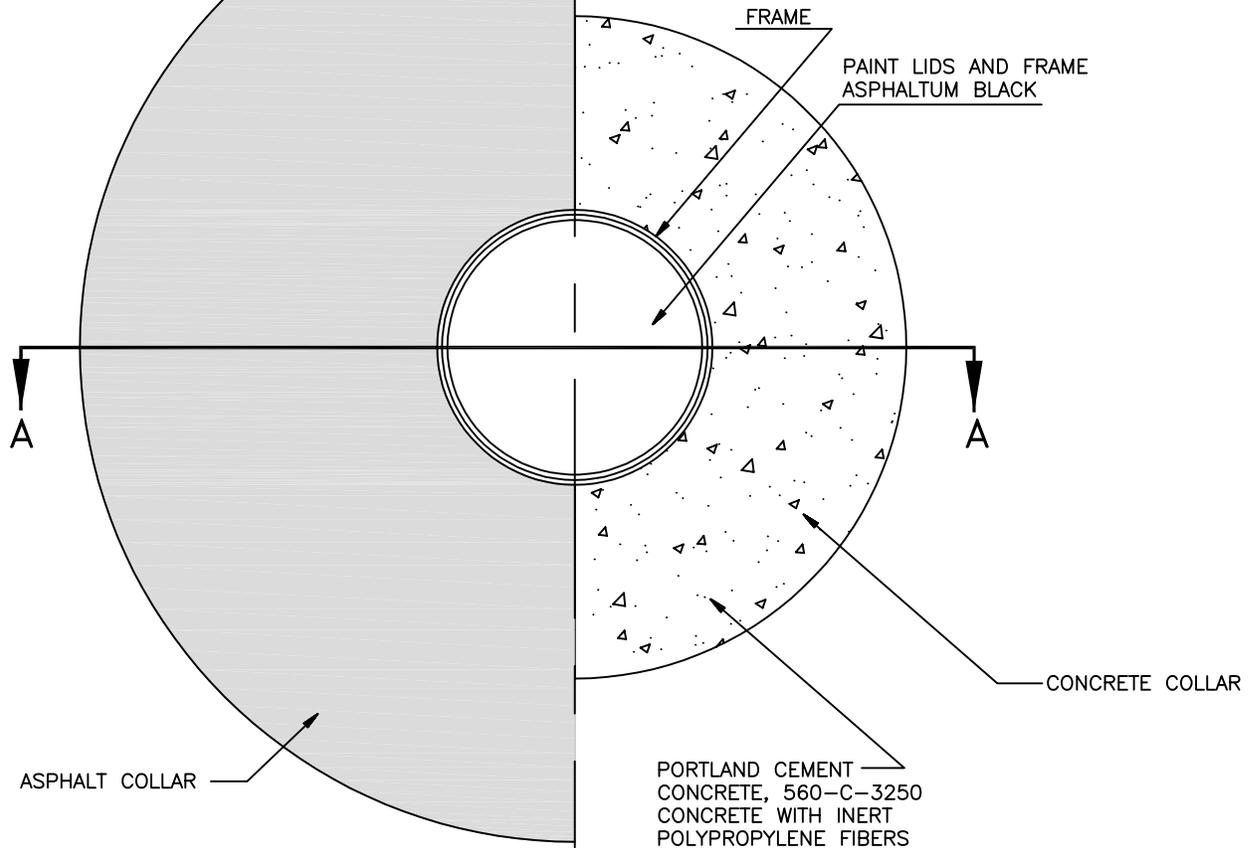
**MANHOLE COLLAR IN RESIDENTIAL AREA
LIGHT TRAFFIC AREA**

APPROVAL DATE: 02/25

DRAWING NUMBER: S-1A

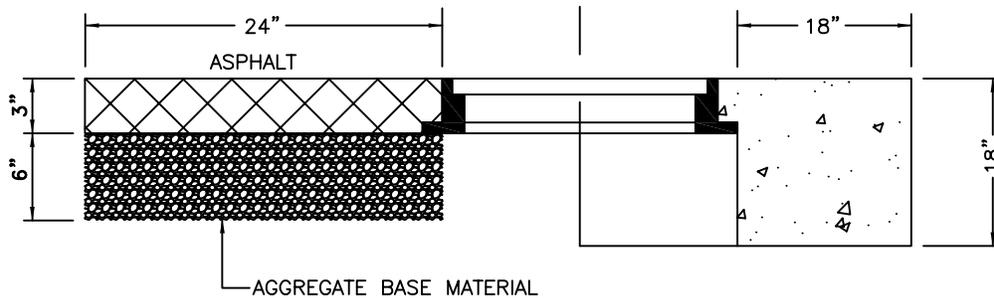
OUT OF PAVEMENT

**IN PAVEMENT
NONRESIDENTIAL
ROADWAYS**



FRAME & COLLAR

FINISHED CONCRETE COLLAR TO BE
1/8" BELOW FINISHED PAVEMENT OR
GRADE



SECTION A-A

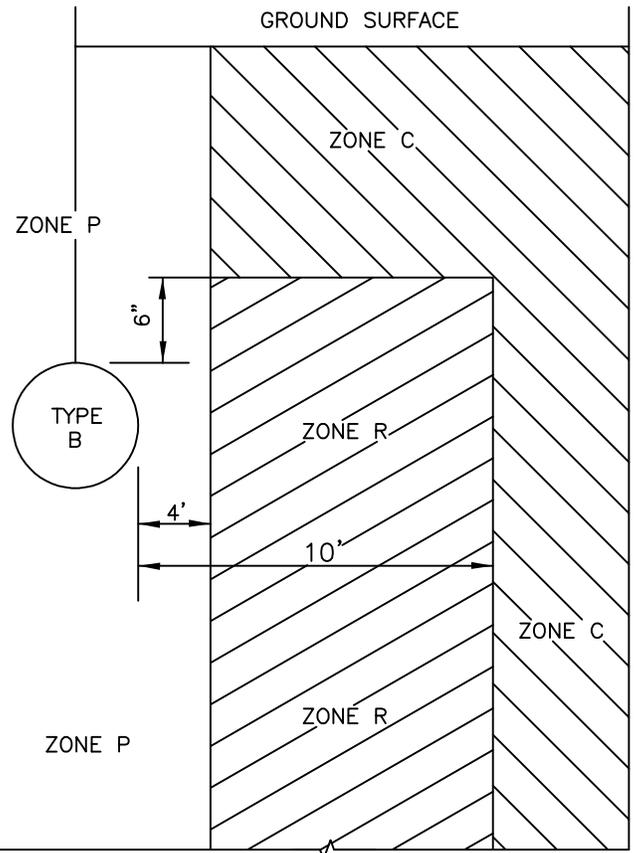
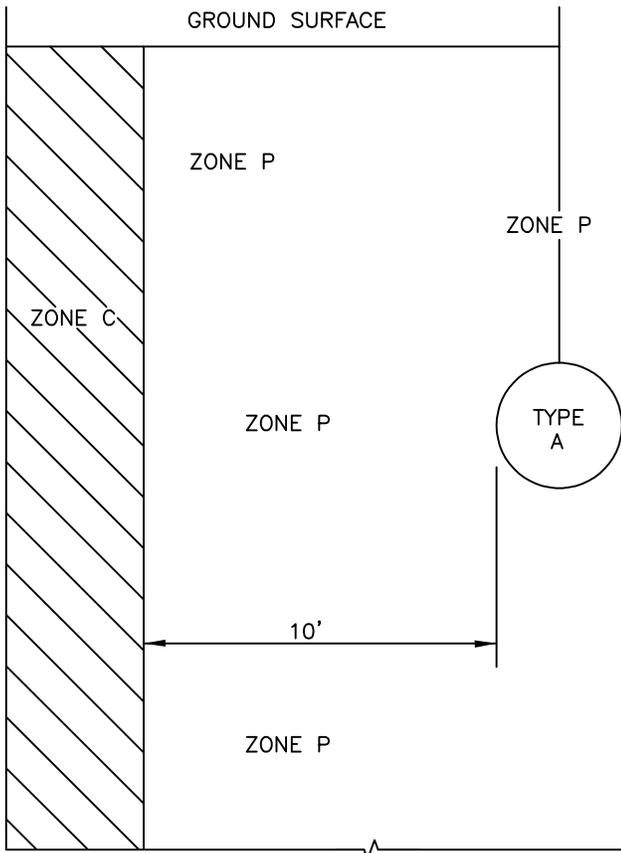


COACHELLA VALLEY WATER DISTRICT

MANHOLE COLLAR IN HEAVY TRAFFIC AREA

APPROVAL DATE: 02/25

DRAWING NUMBER: S-1B



PIPE CONVEYANCE TYPE A

CCR, TITLE 22 SECTION 64572(A)

1. UNTREATED SEWAGE
2. PRIMARY OR SECONDARY TREATED SEWAGE
3. DISINFECTED SECONDARY-22 RECYCLED WATER
4. DISINFECTED SECONDARY-23 RECYCLED WATER
5. HAZARDOUS FLUIDS

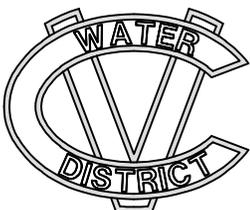
PIPE CONVEYANCE TYPE B

CCR, TITLE 22 SECTION 64572(B)

1. DISINFECTED TERTIARY RECYCLED WATER
2. STORM DRAINAGE

LEGEND

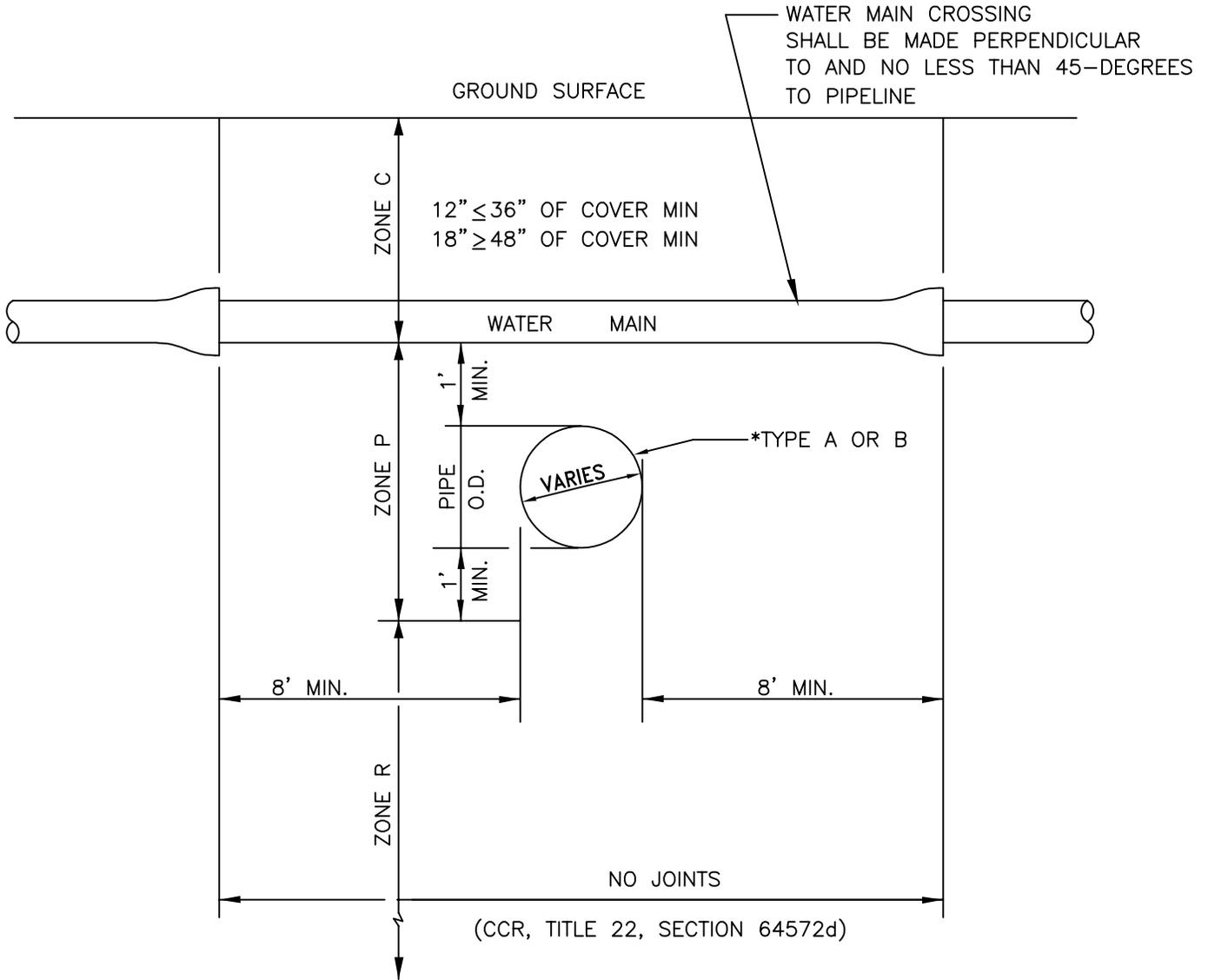
<u>ZONE</u>	<u>SPECIAL CONSTRUCTION</u>
C	DUCTILE IRON PIPE
R	CONSTRUCTION RESTRICTED (CDPH - APPROVAL REQD)
P	CONSTRUCTION PROHIBITED



**COACHELLA VALLEY WATER DISTRICT
SEPARATION AND CONSTRUCTION
REQUIREMENTS
FOR SEWER AND WATER LINES
(PARALLEL)**

APPROVAL DATE: 09/18

DRAWING NUMBER: W-1/S-3

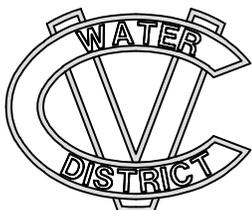


LEGEND

ZONE

SPECIAL CONSTRUCTION

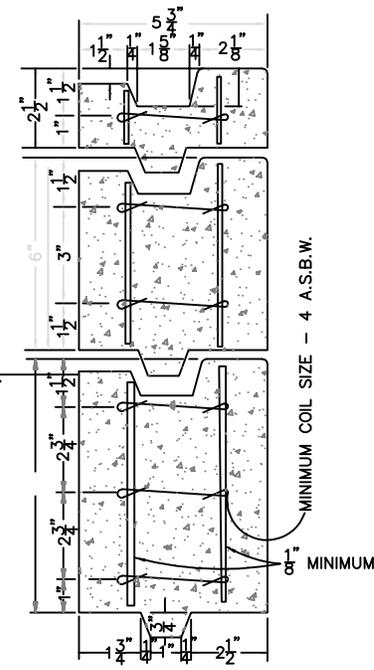
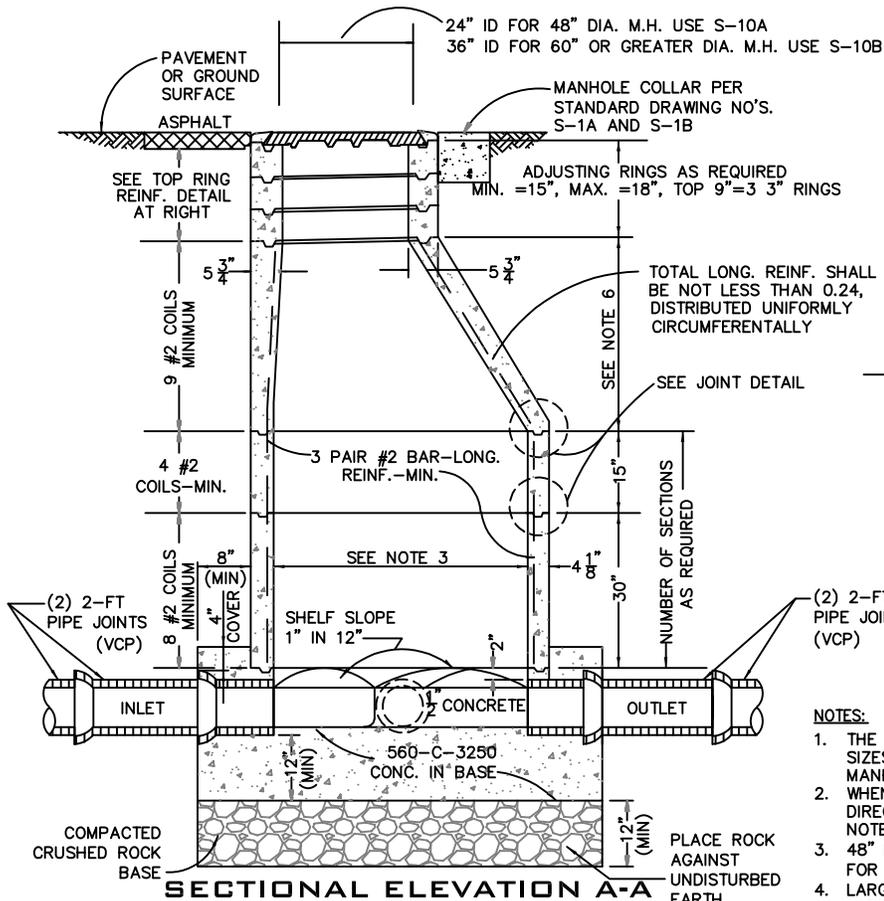
- C DUCTILE IRON PIPE (NO JOINTS)
- R CONSTRUCTION RESTRICTED (CDPH – APPROVAL REQD)
- P CONSTRUCTION PROHIBITED
- * SEE STD. DWG. W-1



**COACHELLA VALLEY WATER DISTRICT
SEPARATION AND CONSTRUCTION
REQUIREMENTS
FOR SEWER AND WATER LINES
(CROSSINGS)**

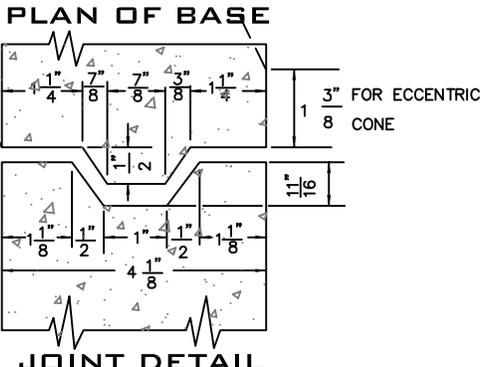
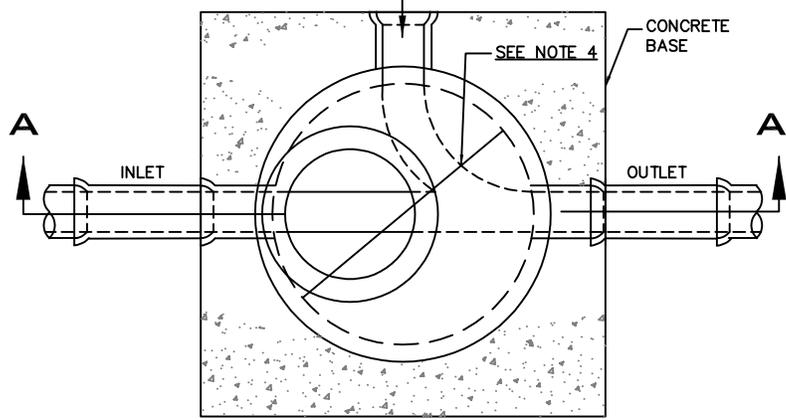
APPROVAL DATE: 09/18

DRAWING NUMBER: W-2/S-4

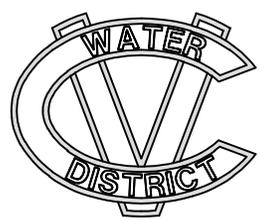


TOP RING DETAIL

- NOTES:**
1. THE DEPTH OF CHANNEL SHALL EQUAL THE PIPE DIAMETER FOR ALL SIZES OF PIPE. FOR SPECIAL CHANNELS IN TRAP OR GAUGING MANHOLES, SEE SPECIFIC PROJECT DETAILS SHOWN ON THE DRAWINGS.
 2. WHENEVER PRACTICABLE THE FRAME AND COVER SHALL BE PLACED DIRECTLY OVER THE INLET OF THE STRUCTURE EXCEPT AS OTHERWISE NOTED ON PLANS.
 3. 48" DIA. FOR 21" DIA. OR SMALLER PIPE. (MINIMUM SIZE) 60" DIA. FOR 24" DIA. OR LARGER PIPE. (MINIMUM SIZE)
 4. LARGER DIAMETER MANHOLES MAY BE REQUIRED FOR 27" DIA. OR LARGER PIPE. CHECK WITH ENGINEER.
 5. MANUFACTURING METHODS AND MATERIALS FOR PRE CAST UNITS SHALL CONFORM TO ASTM C-478.
 6. TAPERED HEIGHT 30" MIN. FOR 48" DIA. TAPERED HEIGHT 24" MIN. FOR 60" DIA. OR GREATER.
 7. STRUCTURAL ELEMENTS OF MANHOLE SHALL MEET ALL APPROPRIATE ASTM STANDARDS.
 8. SEE MANHOLE FRAME AND COVER STD. DETAIL FOR SIZE AND TYPE
 9. SECTIONS SHALL BE SECURELY BONDED TOGETHER WITH PREFORMED PLASTIC SEALING COMPOUND OR CEMENT MORTAR. MORTAR SHALL HAVE MINIMUM THICKNESS OF 3/8-INCH AND BE CLASS C PORTLAND CEMENT MORTAR IN ACCORDANCE WITH THESE SPECIFICATIONS. PREFORMED PLASTIC SEALING COMPOUND SHALL BE 1-1/4-INCH SQUARE BEADS, KENT-SEAL NO. 2 MANUFACTURED BY HAMILTON KENT MANUFACTURING COMPANY, KENT, OH; RAM-NEK, MANUFACTURED BY HENRY SEALANTS, HOUSTON, TX; OR APPROVED EQUAL. JOINTS SHALL BE WATERTIGHT AND NEATLY POINTED ON THE INSIDE.
 10. GRADE RING JOINTS SHALL BE SEALED WITH MORTAR.
 11. NO STEPS ARE ALLOWED IN ANY MANHOLE. ALL SHAFTS AND CONES SHALL BE PRECAST. ECCENTRIC CONE SHALL BE SET WITH STRAIGHT SIDE ON THE UPSTREAM SIDE OF THE MANHOLE.
 12. MANHOLES SHALL HAVE CONCRETE BASES (560-C-3250). IF NOTED ON THE PLAN, WITH A SINGLE LAYER OF #6 (19 MM) BARS @ 12" E.W. SIDES OF BASE SHALL BE FORMED BY EITHER WOOD FORMS OR SANDBAGS. BASE MAY BE EITHER CIRCULAR OR RECTANGULAR. IF CIRCULAR, THE AREA SHALL BE EQUAL TO THE AREA OF THE SQUARE BASE. UNLESS OTHERWISE NOTED, ALL CONCRETE AND MORTAR SHALL USE CLASS LL/V CEMENT.
 13. THE COMPLETE CONCRETE CHANNEL SHALL BE CONSTRUCTED WITH FORMS. WHEN APPROVED BY CVWD, THE NEW OR EXISTING MAIN LINE MAY BE USED FOR THE CHANNEL. PIPE ABOVE SPRING LINE SHALL BE REMOVED BY SAW CUTTING. THE REMOVED SECTION LENGTH SHALL BE EQUAL TO THE MANHOLE SHAFT INSIDE DIAMETER.
 14. MANHOLE SHELVES SHALL BE SLOPED 1/4" PER FOOT TO CHANNEL
 15. THE SOFFIT OF ALL LATERAL PIPES SHALL BE AT THE SAME ELEVATION AS THE MAIN PIPE SOFFIT.
 16. EACH MAIN LINE OR LATERAL CONNECTION TO THE MANHOLE BASE SHALL HAVE TWO EACH, TWO FOOT JOINTS.
 17. ALL UNUSED CONNECTIONS SHALL HAVE A FACTORY MADE PLUG INSTALLED IN THE BELL END OF THE PIPE WITH RESTRAINT SUFFICIENT TO WITHSTAND LEAKAGE TESTING.
 18. VACUUM TESTING SHALL BE PERFORMED PER ASTM C-1244 UNLESS NOTED OTHERWISE.



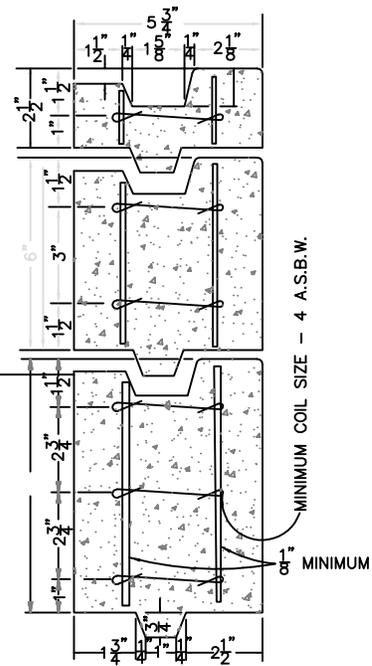
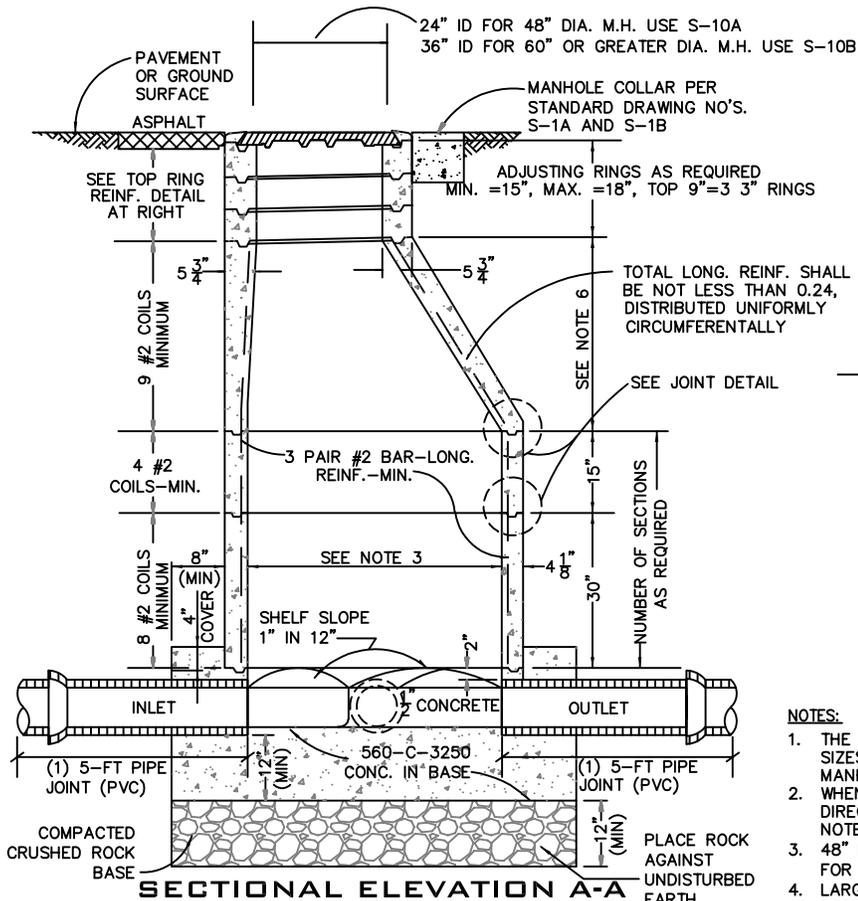
PIPE SIZE (DIA.)	MIN. SLOPE
8"	.0033
10"	.0024
12"	.0019
15"	.0014
18"	.0014
21"	.0014
24"	.0014
27"	.0014
30"	.0014
33"	.0014
36"	.0014



COACHELLA VALLEY WATER DISTRICT

REINFORCED PRECAST CONCRETE MANHOLE WITH VCP INLET/OUTLET

APPROVAL DATE: 03/25 DRAWING NUMBER: **S-5A**

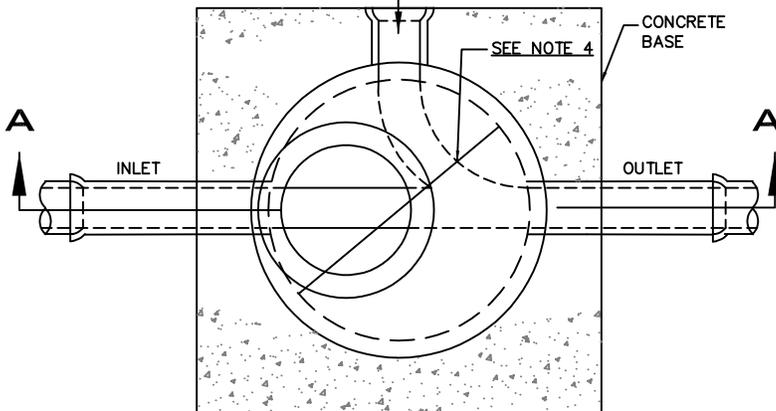


TOP RING DETAIL

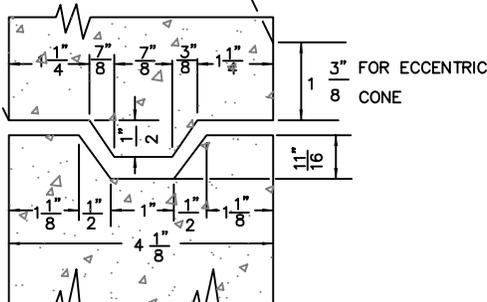
NOTES:

1. THE DEPTH OF CHANNEL SHALL EQUAL THE PIPE DIAMETER FOR ALL SIZES OF PIPE. FOR SPECIAL CHANNELS IN TRAP OR GAUGING MANHOLES, SEE SPECIFIC PROJECT DETAILS SHOWN ON THE DRAWINGS.
2. WHENEVER PRACTICABLE THE FRAME AND COVER SHALL BE PLACED DIRECTLY OVER THE INLET OF THE STRUCTURE EXCEPT AS OTHERWISE NOTED ON PLANS.
3. 48" DIA. FOR 21" DIA. OR SMALLER PIPE. (MINIMUM SIZE) 60" DIA. FOR 24" DIA. OR LARGER PIPE. (MINIMUM SIZE)
4. LARGER DIAMETER MANHOLES MAY BE REQUIRED FOR 27" DIA. OR LARGER PIPE. CHECK WITH ENGINEER.
5. MANUFACTURING METHODS AND MATERIALS FOR PRE CAST UNITS SHALL CONFORM TO ASTM C-478.
6. TAPERED HEIGHT 30" MIN. FOR 48" DIA. TAPERED HEIGHT 24" MIN. FOR 60" DIA. OR GREATER.
7. STRUCTURAL ELEMENTS OF MANHOLE SHALL MEET ALL APPROPRIATE ASTM STANDARDS.
8. SEE MANHOLE FRAME AND COVER STD. DETAIL FOR SIZE AND TYPE
9. SECTIONS SHALL BE SECURELY BONDED TOGETHER WITH PREFORMED PLASTIC SEALING COMPOUND OR CEMENT MORTAR. MORTAR SHALL HAVE MINIMUM THICKNESS OF 3/8-INCH AND BE CLASS C PORTLAND CEMENT MORTAR IN ACCORDANCE WITH THESE SPECIFICATIONS. PREFORMED PLASTIC SEALING COMPOUND SHALL BE 1-1/4-INCH SQUARE BEADS, KENT-SEAL NO. 2 MANUFACTURED BY HAMILTON KENT MANUFACTURING COMPANY, KENT, OH; RAM-NEK, MANUFACTURED BY HENRY SEALANTS, HOUSTON, TX; OR APPROVED EQUAL. JOINTS SHALL BE WATERTIGHT AND NEATLY POINTED ON THE INSIDE.
10. GRADE RING JOINTS SHALL BE SEALED WITH MORTAR.
11. NO STEPS ARE ALLOWED IN ANY MANHOLE. ALL SHAFTS AND CONES SHALL BE PRECAST. ECCENTRIC CONE SHALL BE SET WITH STRAIGHT SIDE ON THE UPSTREAM SIDE OF THE MANHOLE.
12. MANHOLES SHALL HAVE CONCRETE BASES (560-C-3250). IF NOTED ON THE PLAN, WITH A SINGLE LAYER OF #6 (19 MM) BARS @ 12" E.W. SIDES OF BASE SHALL BE FORMED BY EITHER WOOD FORMS OR SANDBAGS. BASE MAY BE EITHER CIRCULAR OR RECTANGULAR. IF CIRCULAR, THE AREA SHALL BE EQUAL TO THE AREA OF THE SQUARE BASE. UNLESS OTHERWISE NOTED, ALL CONCRETE AND MORTAR SHALL USE CLASS LL/V CEMENT.
13. THE COMPLETE CONCRETE CHANNEL SHALL BE CONSTRUCTED WITH FORMS. WHEN APPROVED BY CVWD, THE NEW OR EXISTING MAIN LINE MAY BE USED FOR THE CHANNEL. PIPE ABOVE SPRING LINE SHALL BE REMOVED BY SAW CUTTING. THE REMOVED SECTION LENGTH SHALL BE EQUAL TO THE MANHOLE SHAFT INSIDE DIAMETER.
14. MANHOLE SHELVES SHALL BE SLOPED 1/4" PER FOOT TO CHANNEL
15. THE SOFFIT OF ALL LATERAL PIPES SHALL BE AT THE SAME ELEVATION AS THE MAIN PIPE SOFFIT.
16. EACH MAIN LINE OR LATERAL CONNECTION TO THE MANHOLE BASE SHALL HAVE TWO EACH, TWO FOOT JOINTS.
17. ALL UNUSED CONNECTIONS SHALL HAVE A FACTORY MADE PLUG INSTALLED IN THE BELL END OF THE PIPE WITH RESTRAINT SUFFICIENT TO WITHSTAND LEAKAGE TESTING.
18. VACUUM TESTING SHALL BE PERFORMED PER ASTM C-1244 UNLESS NOTED OTHERWISE.

SECTIONAL ELEVATION A-A

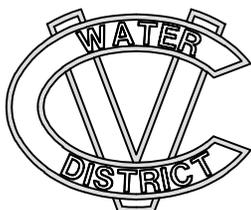


PLAN OF BASE



JOINT DETAIL

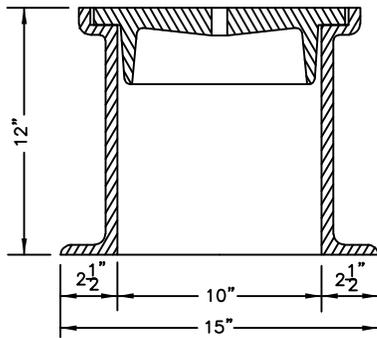
PIPE SIZE (DIA.)	MIN. SLOPE
8"	.0033
10"	.0024
12"	.0019
15"	.0014
18"	.0014
21"	.0014
24"	.0014
27"	.0014
30"	.0014
33"	.0014
36"	.0014



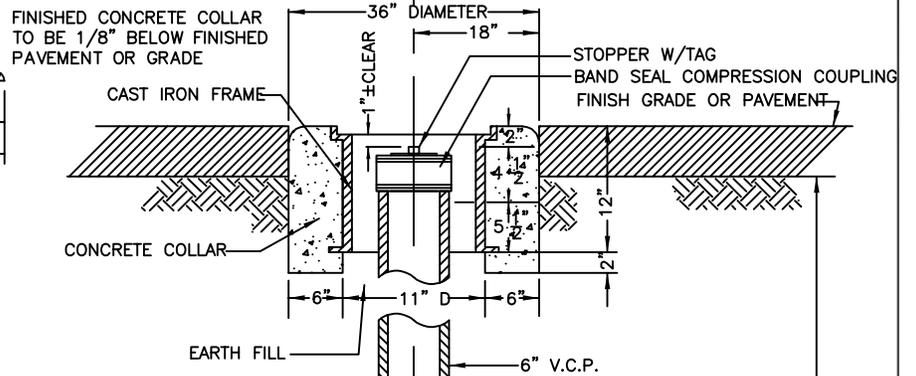
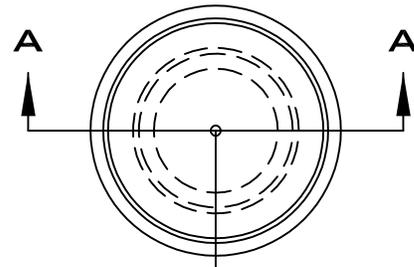
**COACHELLA VALLEY WATER DISTRICT
REINFORCED PRECAST
CONCRETE MANHOLE
WITH PVC INLET/OUTLET**

APPROVAL DATE: 03/25

DRAWING NUMBER: **S-5B**

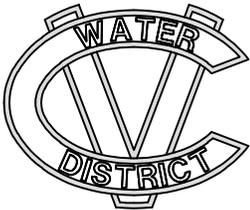
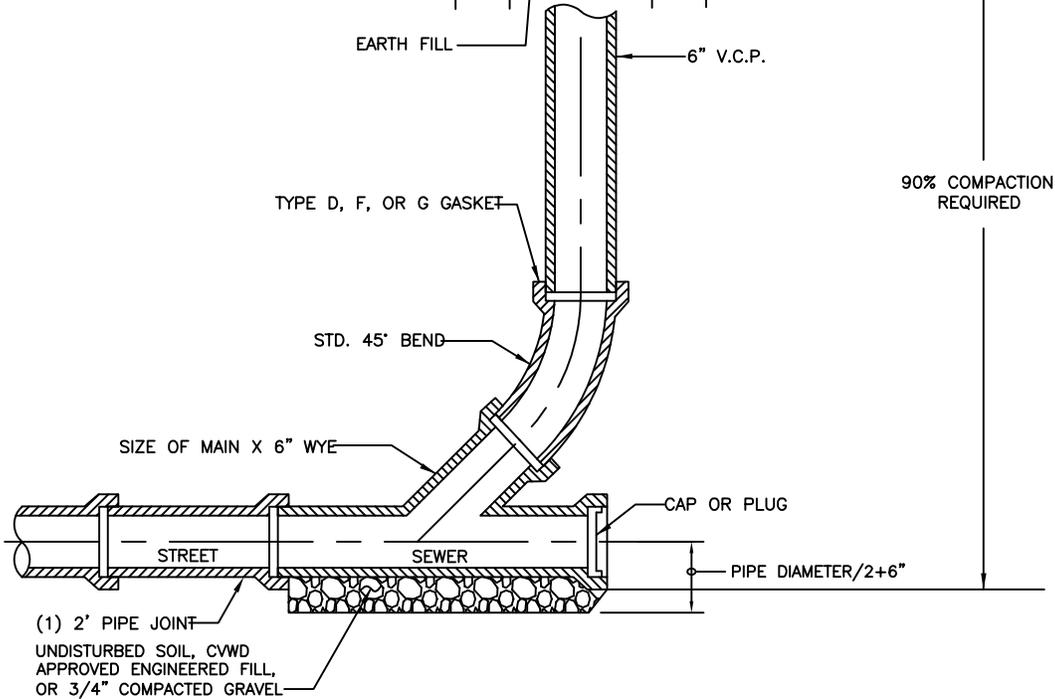


SECTION A-A



NOTES:

1. CONCRETE SHALL BE 520-C-2500
2. CLEAN-OUT FRAME AND COVER SHALL BE ALHAMBRA A-1240 OR APPROVED EQUAL.
3. THE WORD "SEWER" OR THE LETTERS "C.O." SHALL BE IMPRINTED ON THE COVER
4. TAG SHALL BE SS, ONE (1) INCH DIAMETER, AND CONNECTED TO THE STOPPER WITH A SS CHAIN OR CABLE. "C.O." SHALL BE IMPRINTED ON THE TAG.
5. THE LETTER "CO", 2 INCHES IN HEIGHT, SHALL BE CHISELED OR PERMANENTLY MARKED ON THE CURB AT THE LOCATION OF THE CLEAN-OUT.
6. CLEAN OUTS IN PUBLIC RIGHT OF WAY ONLY. SEE STANDARD DRAWING NOS. S-44 AND S-45 FOR CLEAN OUTS LOCATED UNDER DRIVEWAYS.



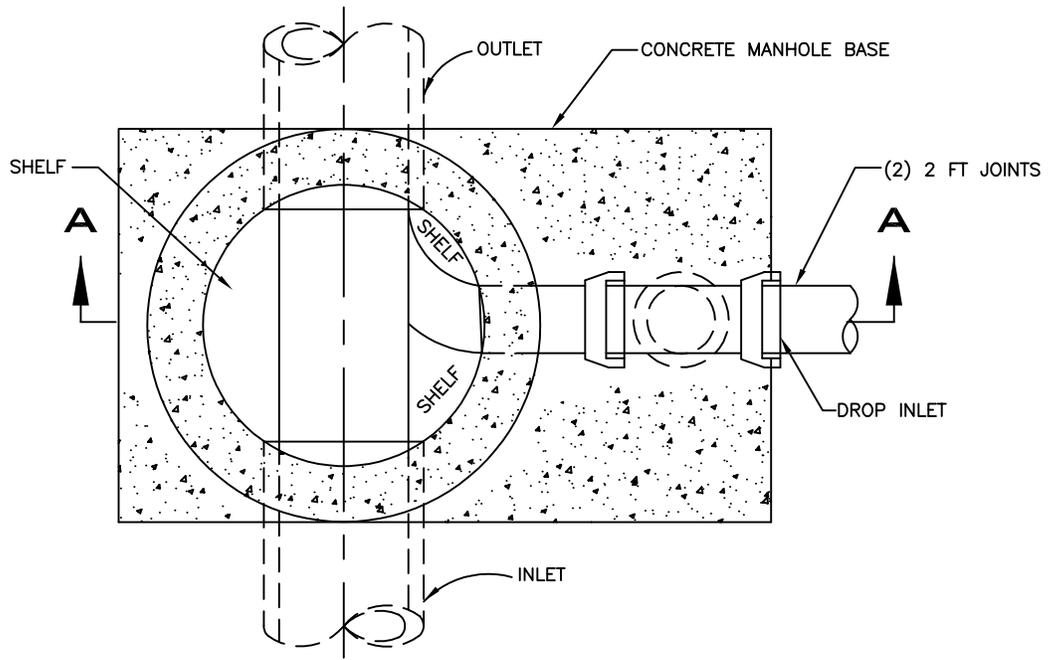
COACHELLA VALLEY WATER DISTRICT

STANDARD CLEAN-OUT

APPROVAL DATE: 03/25

DRAWING NUMBER:

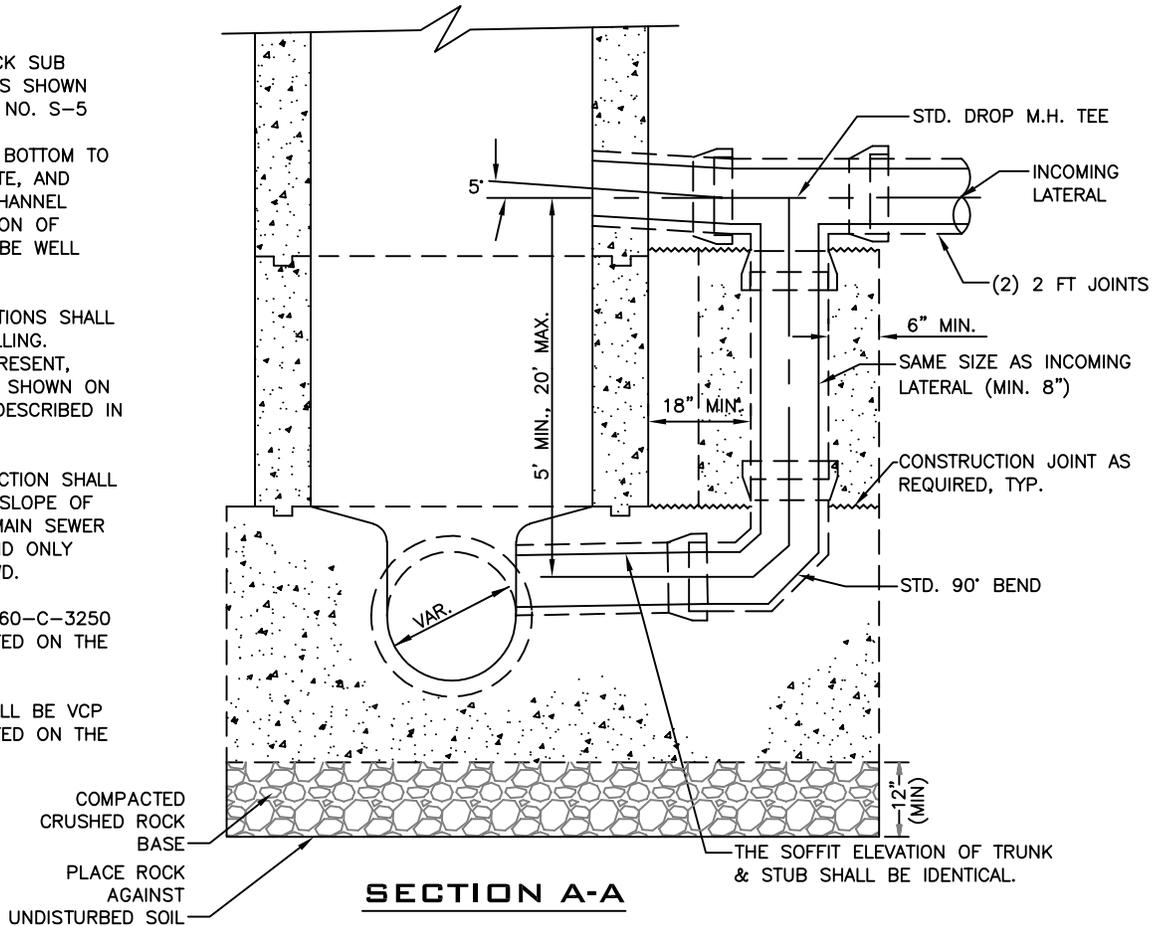
S-6



PLAN SECTION

NOTES:

1. MANHOLE DIMENSIONS, REINFORCING, PIPE, ROCK SUB BASE, ETC. SHALL BE AS SHOWN ON STANDARD DRAWING NO. S-5
2. CHANNEL OF MANHOLE BOTTOM TO BE FORMED IN CONCRETE, AND SIDE WALLS TO HAVE CHANNEL CURVED IN THE DIRECTION OF FLOW. CHANNEL SHALL BE WELL DEFINED.
3. ALL MANHOLE PENETRATIONS SHALL BE MADE BY CORE DRILLING. INTERIOR COATING, IF PRESENT, SHALL BE REPAIRED AS SHOWN ON THE DRAWINGS OR AS DESCRIBED IN THE SPECIFICATIONS
4. DROP MANHOLE CONNECTION SHALL BE USED ONLY WHERE SLOPE OF LATERAL INCOMING TO MAIN SEWER WOULD EXCEED 10% AND ONLY WITH APPROVAL OF CVWD.
5. CONCRETE SHALL BE 560-C-3250 UNLESS OTHERWISE NOTED ON THE DRAWINGS.
6. PIPE AND FITTINGS SHALL BE VCP UNLESS OTHERWISE NOTED ON THE DRAWINGS



SECTION A-A

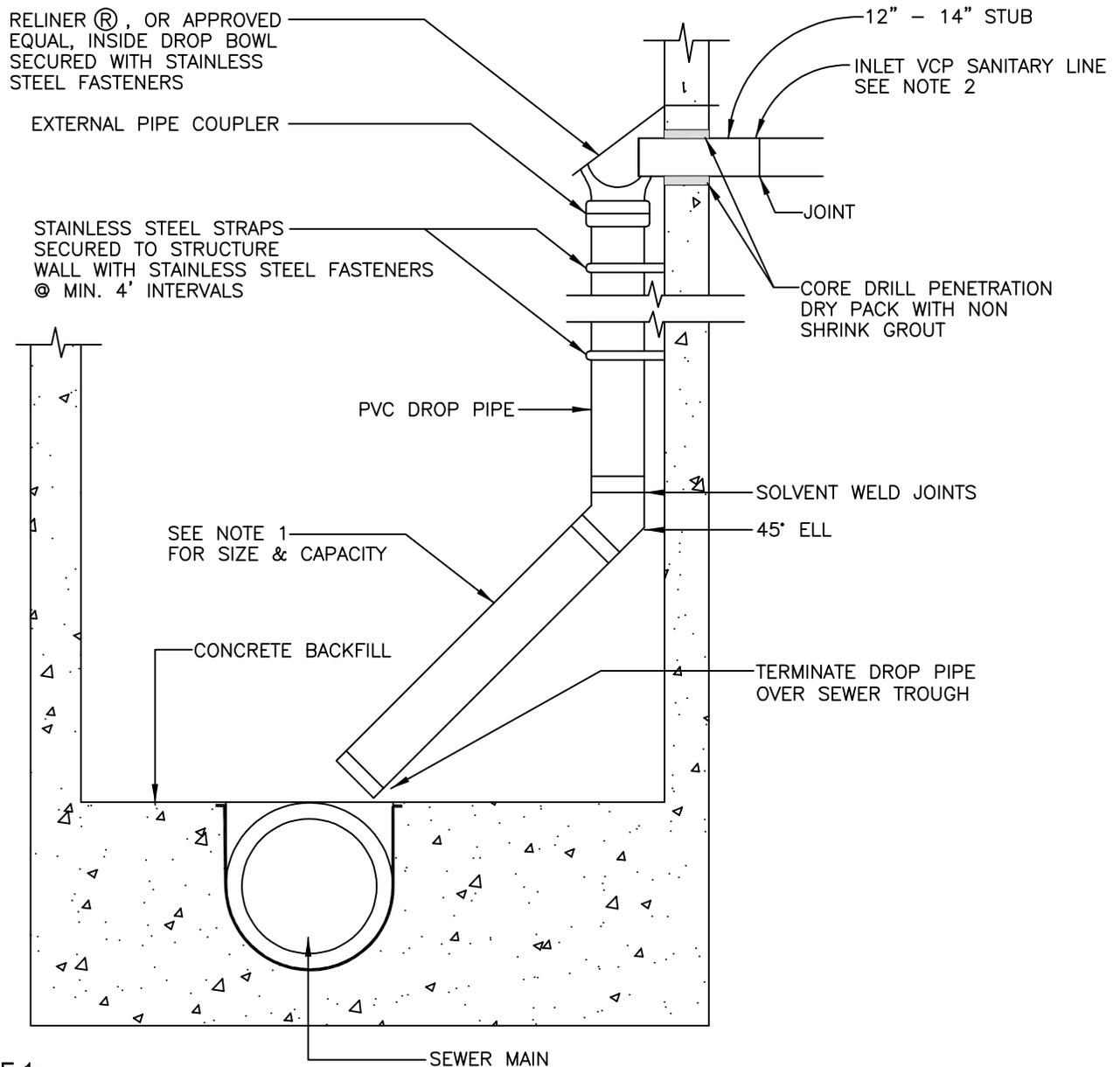


COACHELLA VALLEY WATER DISTRICT

**REINFORCED PRECAST
CONCRETE DROP MANHOLE
ECCENTRIC**

APPROVAL DATE: 09/18

DRAWING NUMBER: **S-8A**



NOTE 1:

- A. A SINGLE 4" DIA. DROP SHALL BE USED FOR A SINGLE 4" DIA. LATERAL.
- B. A SINGLE 6" DIA. DROP MAY BE USED FOR EITHER A SINGLE 6" DIA. LATERAL OR TWO 4" DIA. LATERALS.
- C. ENTERING THE MANHOLE THROUGH A SINGLE PENETRATION. NO MORE THAN (2) 6" DIA DROPS OR 4 LATERALS MAY TERMINATE IN A MANHOLE. IN MULTIPLE LATERAL INSTALLATIONS EACH LATERAL SHALL NOT EXCEED 45' FROM EACH OTHER IN THE HORIZONTAL PLANE.

NOTE 2:

- A. THIS DETAIL DRAWING IS FOR LATERAL SERVICE LINE CONNECTIONS TO SEWERS 20' IN DEPTH OR GREATER ONLY. FOR SEWERS OF LESS THAN 20' IN DEPTH SEE DETAIL DWG. NOS. S-9A, S-9B, S-9C, S-43, S-44 AND S-45.

NOTE 3:

- A. ALL LATERALS UTILIZING THIS DETAIL SHALL HAVE EMS MARKERS PLACED OVER THE LATERAL AT THE PROPERTY LINE OR EDGE OF PAVEMENT. SEE DETAIL DRAWING NO. S-9A FOR EMS MARKER PLACEMENT DETAILS.

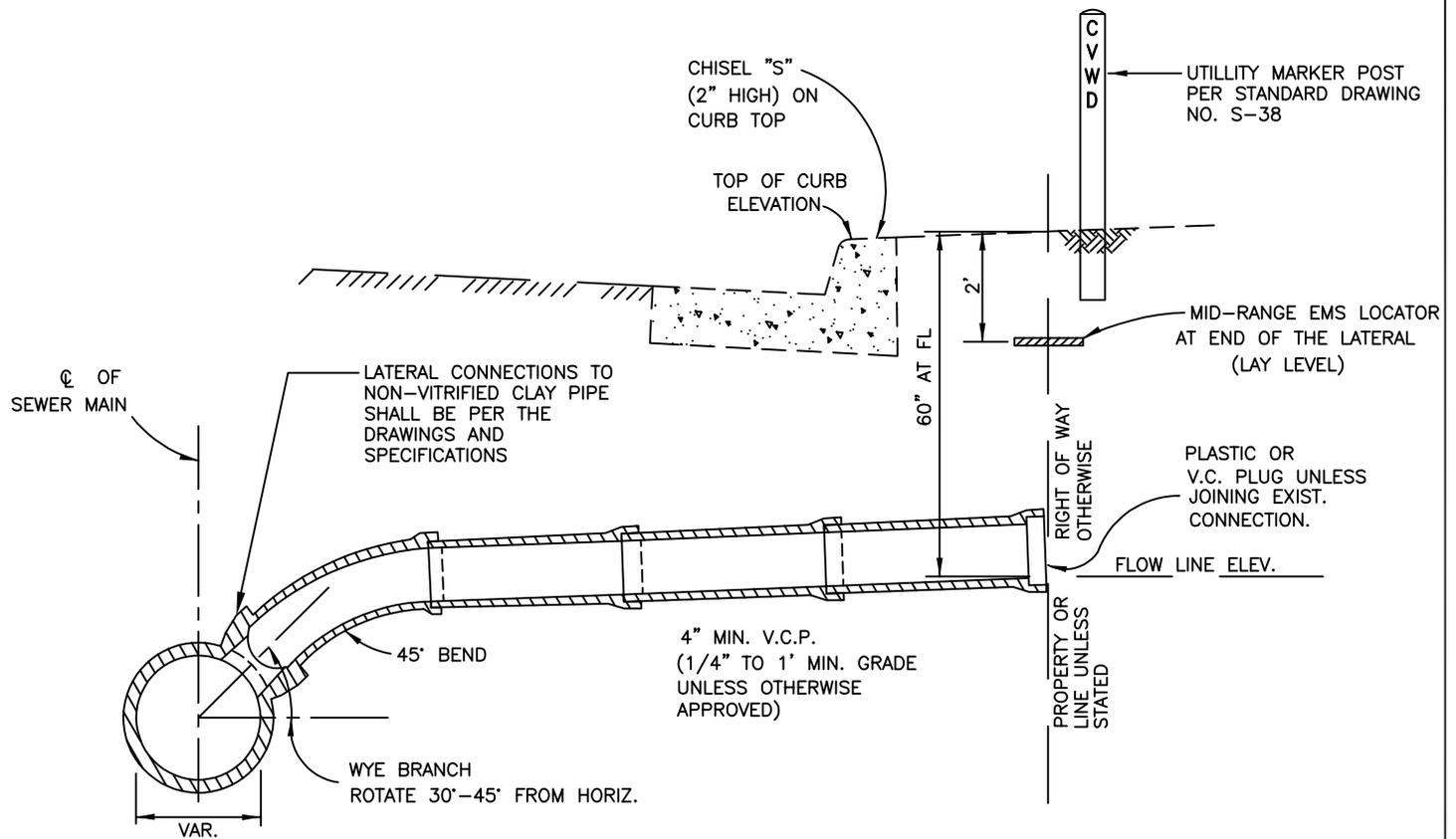


COACHELLA VALLEY WATER DISTRICT

**SEWER LATERAL
DROP MANHOLE
(FOR SEWERS OVER 20' DEEP)**

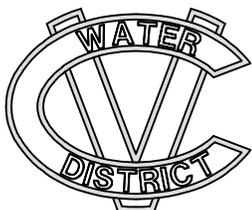
APPROVAL DATE: 09/18

DRAWING NUMBER: S-8B



NOTE:

1. THE HOUSE LATERAL SHALL END AT THE PROPERTY LINE WHEN CURB DOES NOT EXIST.
2. THE HOUSE LATERAL SHALL END ONE FOOT BEYOND THE CURB WHERE CURB EXISTS.
3. 6" LATERALS REQUIRE A CLEAN OUT WITH RISER AT PROPERTY LINE OR TERMINUS.
4. MID-RANGE PIPE LOCATOR MARKERS SHALL BE 3M ELECTRICAL PRODUCTS DIVISION, SCOTCHMARK MARKET LOCATOR (EMS) MODEL NO. 1258, OR EQUIVALENT.
5. FOR LATERALS LEFT UNCONNECTED TO DWELLING UNITS INSTALL A CARSONITE UTILITY MARKER IN ACCORDANCE WITH STANDARD DRAWING NO. S-38 TWO FEET INSIDE THE RIGHT-OF WAY.
6. FOR STREET WITHOUT CURBS, PLACE EMS LOCATOR ONE FOOT BELOW THE FINISHED GROUND SURFACE DIRECTLY ABOVE THE TERMINUS OF THE LATERAL. IN AREAS WHERE THE FINISHED GROUND SURFACE IS UNKNOWN THE MARKER SHALL BE INSTALLED TWO FEET BELOW THE ASSUMED FINISHED GROUND SURFACE. INSTALL CARSONITE UTILITY MARKER PER STANDARD DRAWING NO. S-38 TWO FEET INSIDE THE RIGHT-OF WAY.

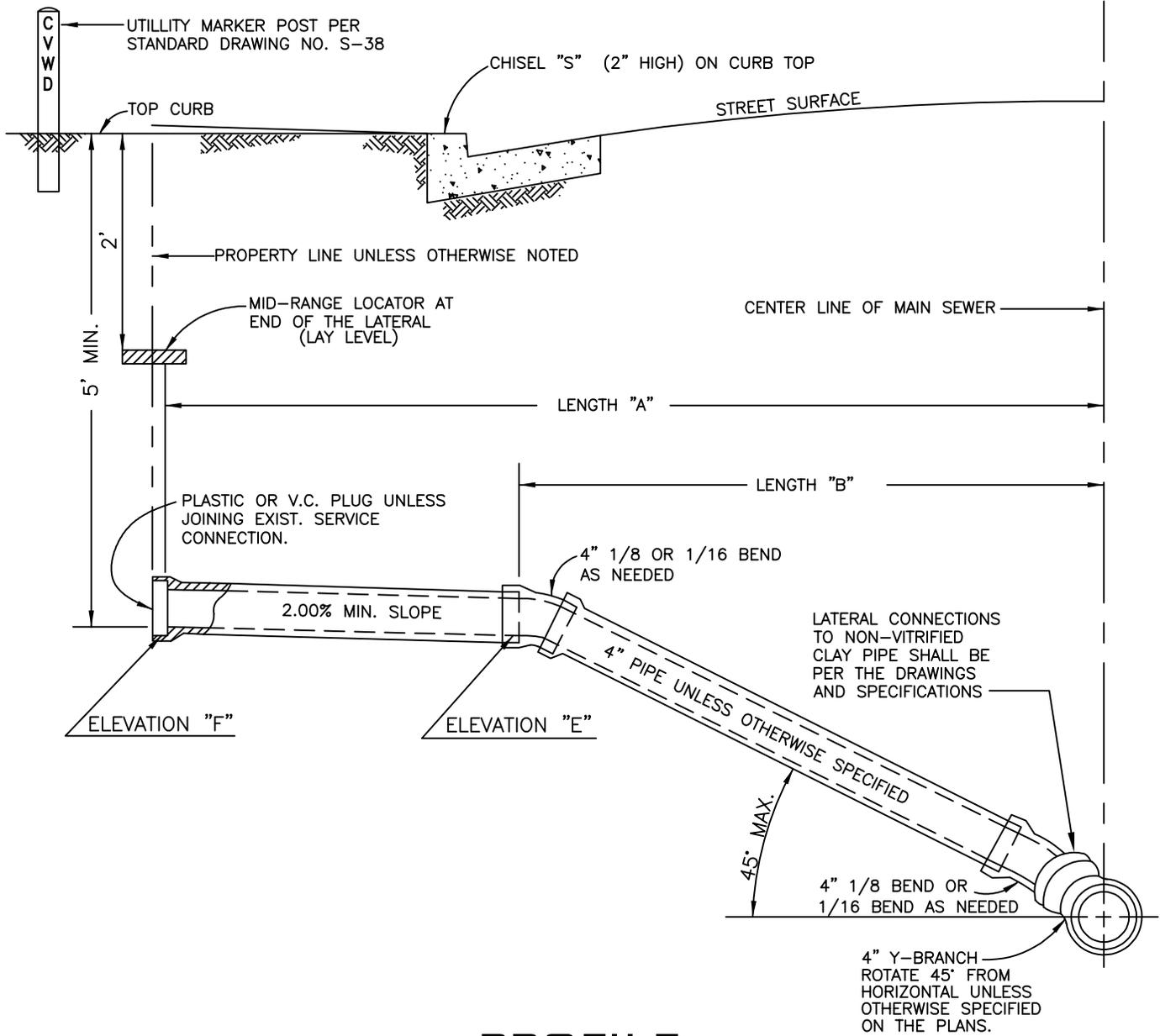


COACHELLA VALLEY WATER DISTRICT

**STANDARD HOUSE LATERAL
TYPE "A"**

APPROVAL DATE: 09/18

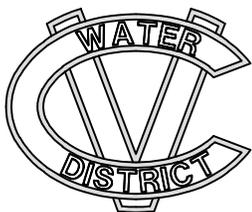
DRAWING NUMBER: **S-9A**



PROFILE

NOTES:

1. SEE SEWER CONSTRUCTION PLANS FOR LENGTH "A", LENGTH "B" AND ELEVATIONS "E" AND "F".
2. THE UPPER END OF THE HOUSE CONNECTION SHALL BE CAPPED WITH A PLASTIC STOPPER OR MECHANICAL PLUG.
3. PIPE FOR HOUSE CONNECTION SEWERS SHALL BE 4" CLAY PIPE UNLESS OTHERWISE SPECIFIED ON THE CONSTRUCTION PLANS.
4. THE HOUSE LATERAL WILL END AT PROPERTY LINE WHEN CURB DOES NOT EXIST.
5. THE HOUSE LATERAL WILL END ONE FOOT BEYOND CURB WHERE CURB EXISTS.
6. 6" LATERALS REQUIRE A CLEAN OUT AT PROPERTY LINE OR TERMINUS.
7. MID-RANGE PIPE LOCATER MARKERS SHALL BE 3M ELECTRICAL PRODUCTS DIVISION, SCOTCHMARK MARKET LOCATER (EMS) MODEL NO. 1258, OR EQUIVALENT.
8. FOR LATERALS LEFT UNCONNECTED TO DWELLING UNITS INSTALL A CARSONITE UTILITY MARKER IN ACCORDANCE WITH STANDARD DRAWING NO. S-38 TWO FEET INSIDE THE RIGHT-OF WAY.
9. FOR STREET WITHOUT CURBS, PLACE EMS LOCATER ONE FOOT BELOW THE FINISHED GROUND SURFACE DIRECTLY ABOVE THE TERMINUS OF THE LATERAL. IN AREAS WHERE THE FINISHED GROUND SURFACE IS UNKNOWN THE MARKER SHALL BE INSTALLED TWO FEET BELOW THE ASSUMED FINISHED GROUND SURFACE. INSTALL CARSONITE UTILITY MARKER PER STANDARD DRAWING NO. S-38 TWO FEET INSIDE THE RIGHT-OF WAY.

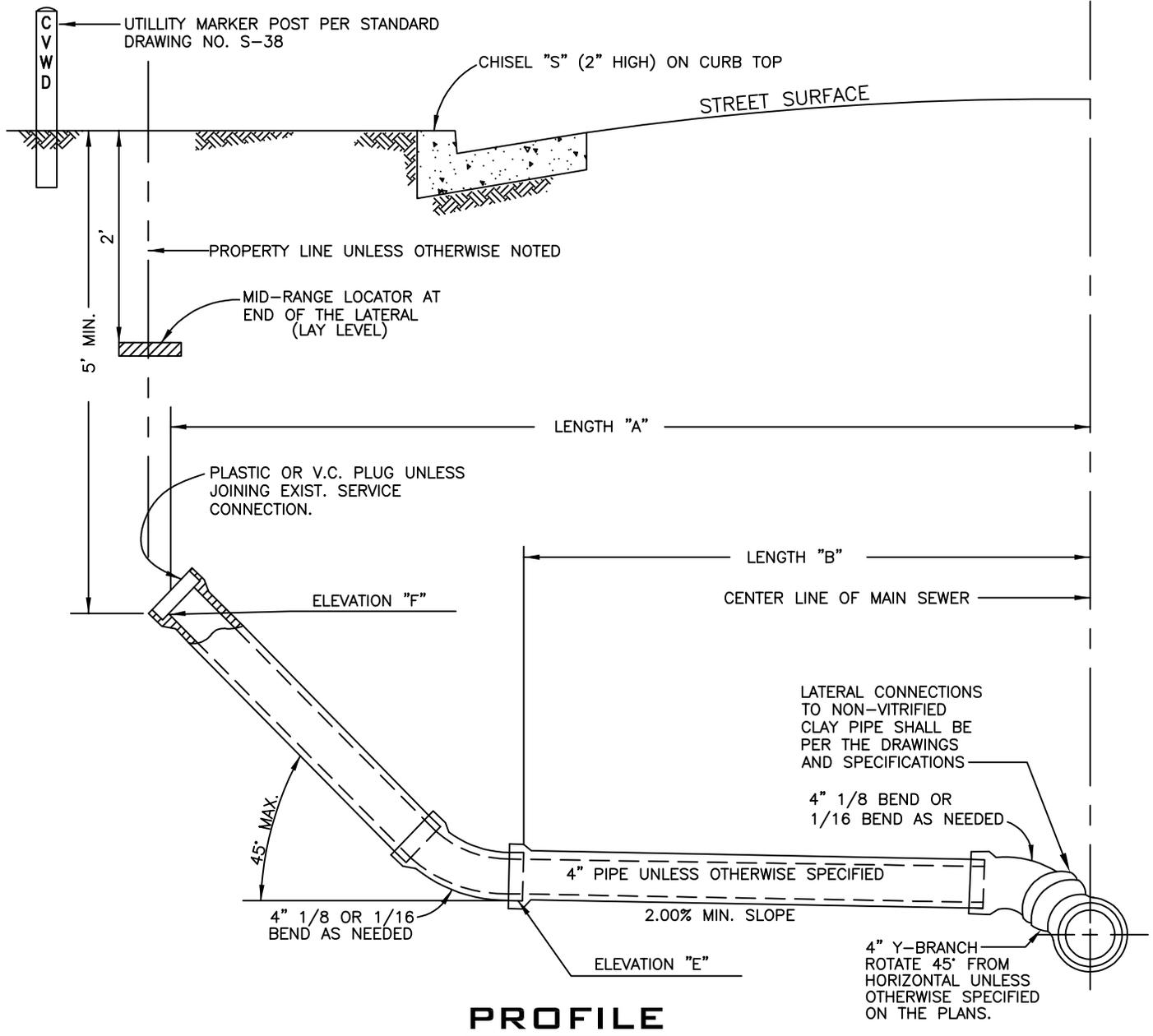


COACHELLA VALLEY WATER DISTRICT

**STANDARD HOUSE LATERAL
TYPE "B"**

APPROVAL DATE: 09/18

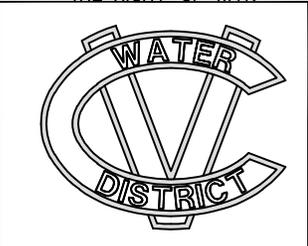
DRAWING NUMBER: **S-9B**



PROFILE

NOTES:

1. SEE SEWER CONSTRUCTION PLANS FOR LENGTH "A", LENGTH "B" AND ELEVATIONS "E" AND "F".
2. THE UPPER END OF THE HOUSE CONNECTION SHALL BE CAPPED WITH A PLASTIC STOPPER OR MECHANICAL PLUG.
3. PIPE FOR HOUSE CONNECTION SEWERS SHALL BE 4" CLAY PIPE UNLESS OTHERWISE SPECIFIED ON THE CONSTRUCTION PLANS.
4. SIX INCH DIA. LATERAL REQUIRES A STANDARD CLEAN-OUT, LOCATED AT THE PROPERTY LINE EDGE OF RIGHT OF WAY, OR BEHIND CURB FACE, WHICHEVER OCCURS NEAREST TO THE STREET SEWER.
5. 6" LATERALS REQUIRE A CLEAN OUT AT PROPERTY LINE OR TERMINUS.
6. MID-RANGE PIPE LOCATOR MARKERS SHALL BE 3M ELECTRICAL PRODUCTS DIVISION, SCOTCHMARK MARKET LOCATOR (EMS) MODEL NO. 1258, OR EQUIVALENT.
7. FOR LATERALS LEFT UNCONNECTED TO DWELLING UNITS INSTALL A CARSONITE UTILITY MARKER IN ACCORDANCE WITH STANDARD DRAWING NO. S-38 TWO FEET INSIDE THE RIGHT-OF WAY.
8. FOR STREET WITHOUT CURBS, PLACE EMS LOCATOR ONE FOOT BELOW THE FINISHED GROUND SURFACE DIRECTLY ABOVE THE TERMINUS OF THE LATERAL. IN AREAS WHERE THE FINISHED GROUND SURFACE IS UNKNOWN THE MARKER SHALL BE INSTALLED TWO FEET BELOW THE ASSUMED FINISHED GROUND SURFACE. INSTALL CARSONITE UTILITY MARKER PER STANDARD DRAWING NO. S-38 TWO FEET INSIDE THE RIGHT-OF WAY.

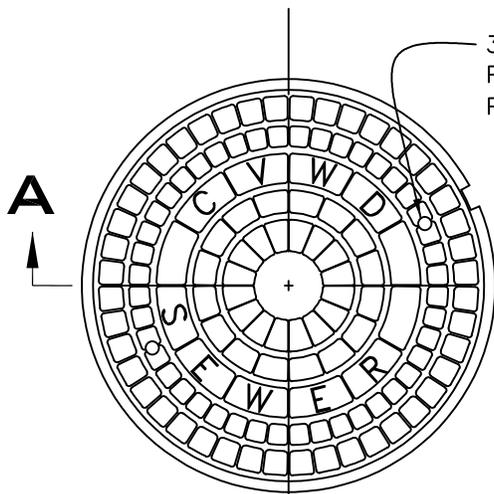


COACHELLA VALLEY WATER DISTRICT

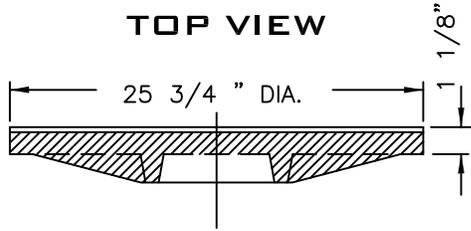
**STANDARD HOUSE LATERAL
TYPE "C"**

APPROVAL DATE: 09/18

DRAWING NUMBER: **S-9C**

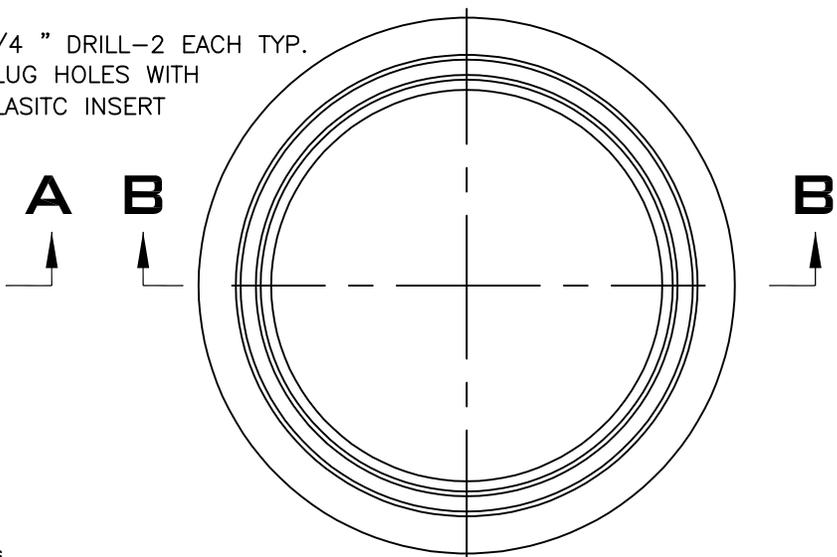


**PLAN OF COVER
TOP VIEW**

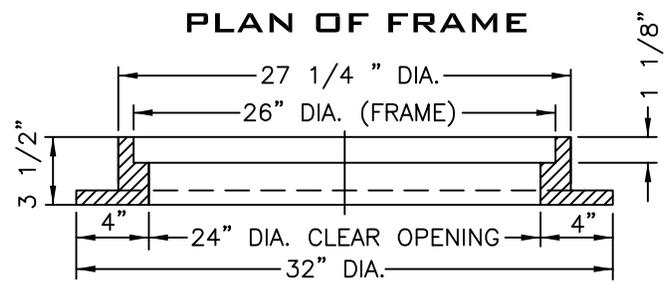


SECTIONAL ELEVATION A-A

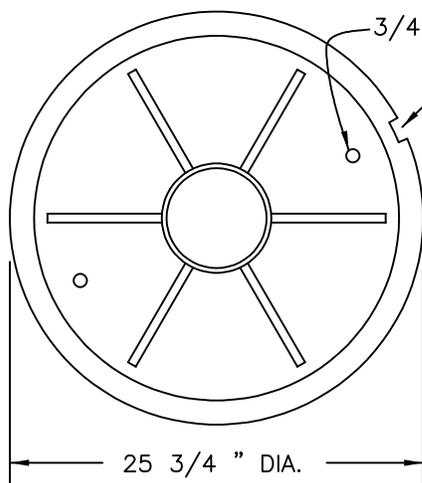
3/4" DRILL-2 EACH TYP.
PLUG HOLES WITH
PLASITC INSERT



PLAN OF FRAME



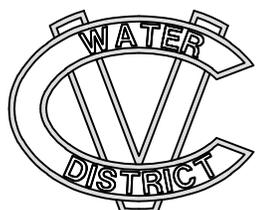
SECTIONAL ELEVATION B-B



**PLAN OF COVER
BOTTOM VIEW**

GENERAL NOTES:

1. THE PRY NOTCH SHALL BE COMPLETELY COVERED BY THE FRAME SEATS TO PREVENT SURFACE WATER INTRUSION.
2. MACHINE SEATS AND GRIND LUGS SMOOTH, PERIMETER OF COVER SHALL BE GROUND SMOOTH, DIAMETER TOLERANCE $\pm 1/16$ ".
3. THE CAST IRON USED SHALL HAVE A TENSILE STRENGTH OF 30,000 LBS. PER. SQUARE INCH.
4. CVWD SEWER SHALL BE ON THE COVER AS SHOWN ABOVE.
5. MANHOLE COVER SHALL BE NON-ROCKING ALHAMBRA A-1254 OR APPROVED EQUAL.
6. SEALED MANHOLE COVER SHALL BE A-1254B OR APPROVED EQUAL.
7. TO BE USED ON 48" DIAMETER MANHOLE SHAFTING.
8. PAINT LIDS AND FRAME ASPHALTUM BLACK.

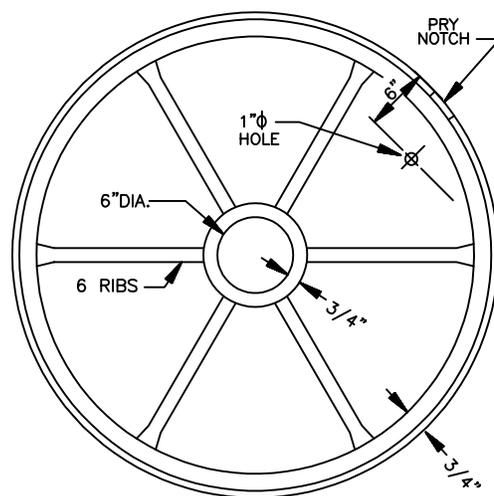
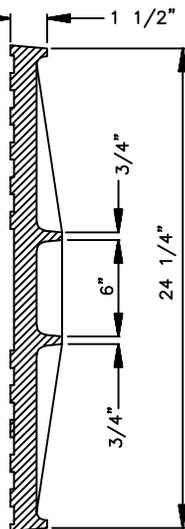
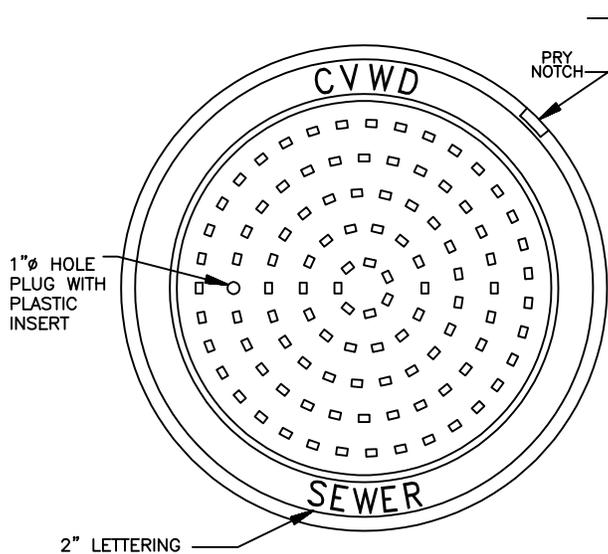


COACHELLA VALLEY WATER DISTRICT

**MANHOLE FRAME & COVER
TYPE "A"**

APPROVAL DATE: 02/25

DRAWING NUMBER: **S-10A**

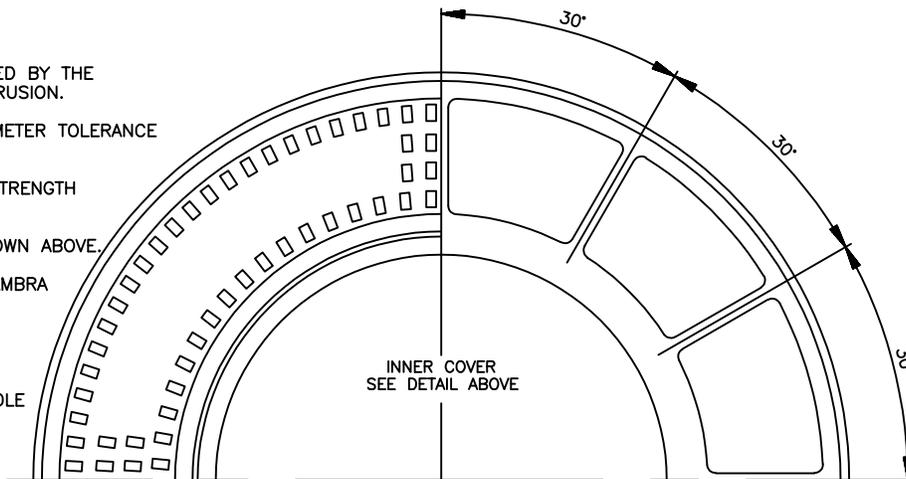


PLAN

COVER

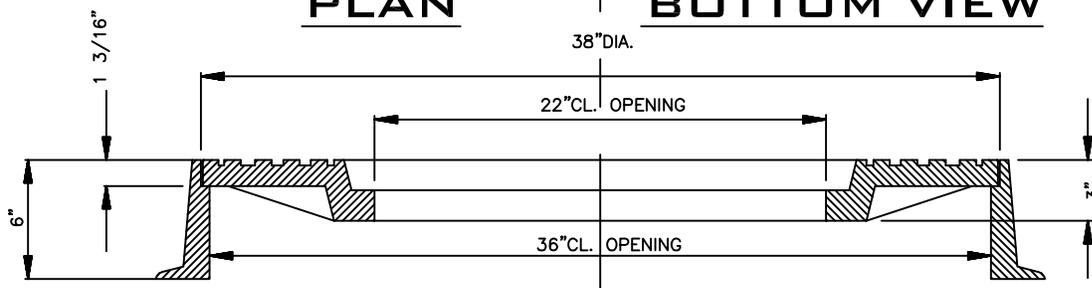
GENERAL NOTES

1. THE PRY NOTCH SHALL BE COMPLETELY COVERED BY THE FRAME SEATS TO PREVENT SURFACE WATER INTRUSION.
2. MACHINE SEATS AND GRIND LUGS SMOOTH, DIAMETER TOLERANCE $\pm 1/8"$.
3. THE CAST IRON USED SHALL HAVE A TENSILE STRENGTH OF 30,000 LBS. PER. SQUARE INCH.
4. CVWD SEWER SHALL BE ON THE COVER AS SHOWN ABOVE.
5. MANHOLE COVER SHALL BE NON-ROCKING ALHAMBRA A-1325 OR APPROVED EQUAL.
6. SEALED MANHOLE COVER SHALL BE ALHAMBRA A-1251 B-6 OR APPROVED EQUAL.
7. TO BE USED ON 60" AND 72" DIAMETER MANHOLE SHAFTING.
8. PAINT LIDS AND FRAME ASPHALTUM BLACK.

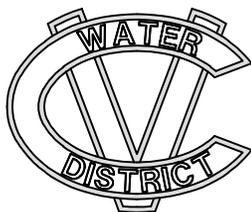


PLAN

BOTTOM VIEW



A-1325 COVER

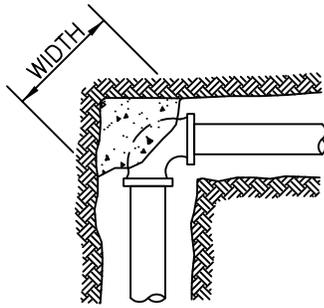


COACHELLA VALLEY WATER DISTRICT

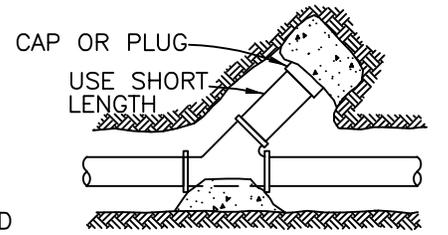
**MANHOLE FRAME & COVER
TYPE "B"**

APPROVAL DATE: 02/25

DRAWING NUMBER: **S-10B**

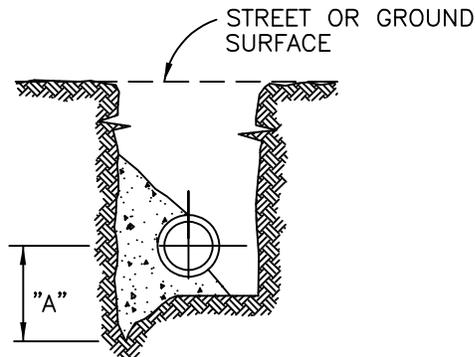


BEND

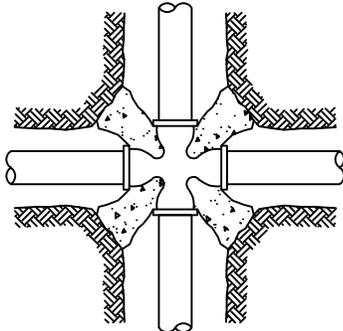


WYE

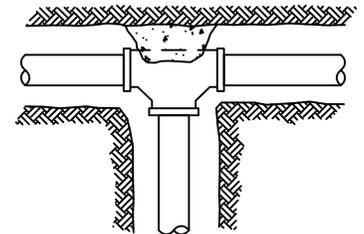
(SHOWN WITH BRANCH CLOSED)



TYPICAL SECTION

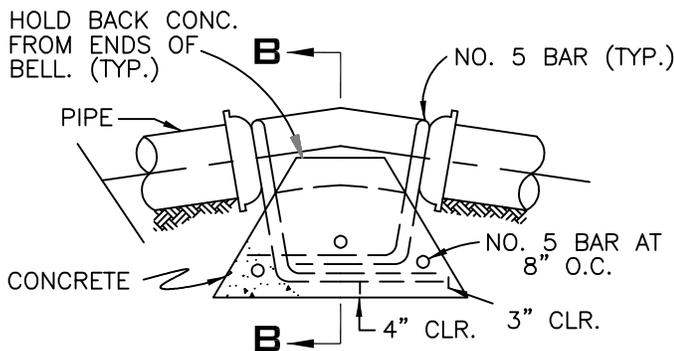


CROSS

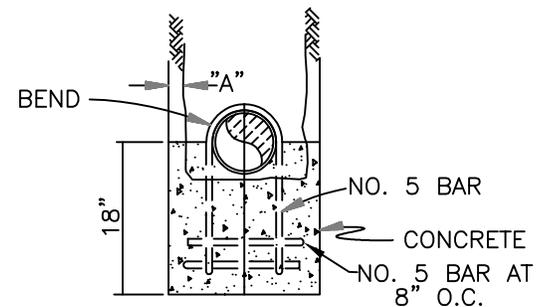


TEE

SECTION:
 6" FOR 6"-8" PIPE
 A= 12" FOR 12" PIPE
 18" FOR 18" PIPE
 B= TO CLEAR BELLS
 OR FLANGES



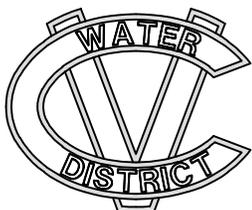
SECTIONAL ELEVATION



**SECTION B-B
 VERTICAL ANCHOR BLOCK**

NOTES:

BEARING AREA FOR THRUST BLOCKS SHALL
 DEPEND ON PRESSURE AND PIPE SIZE.
 FOR BEARING AREAS SEE DETAIL DRAWING W-20/S-20.
 CONCRETE THRUST BLOCKS SHALL BE
 CONSTRUCTED OF 420-B-2000 CONCRETE.

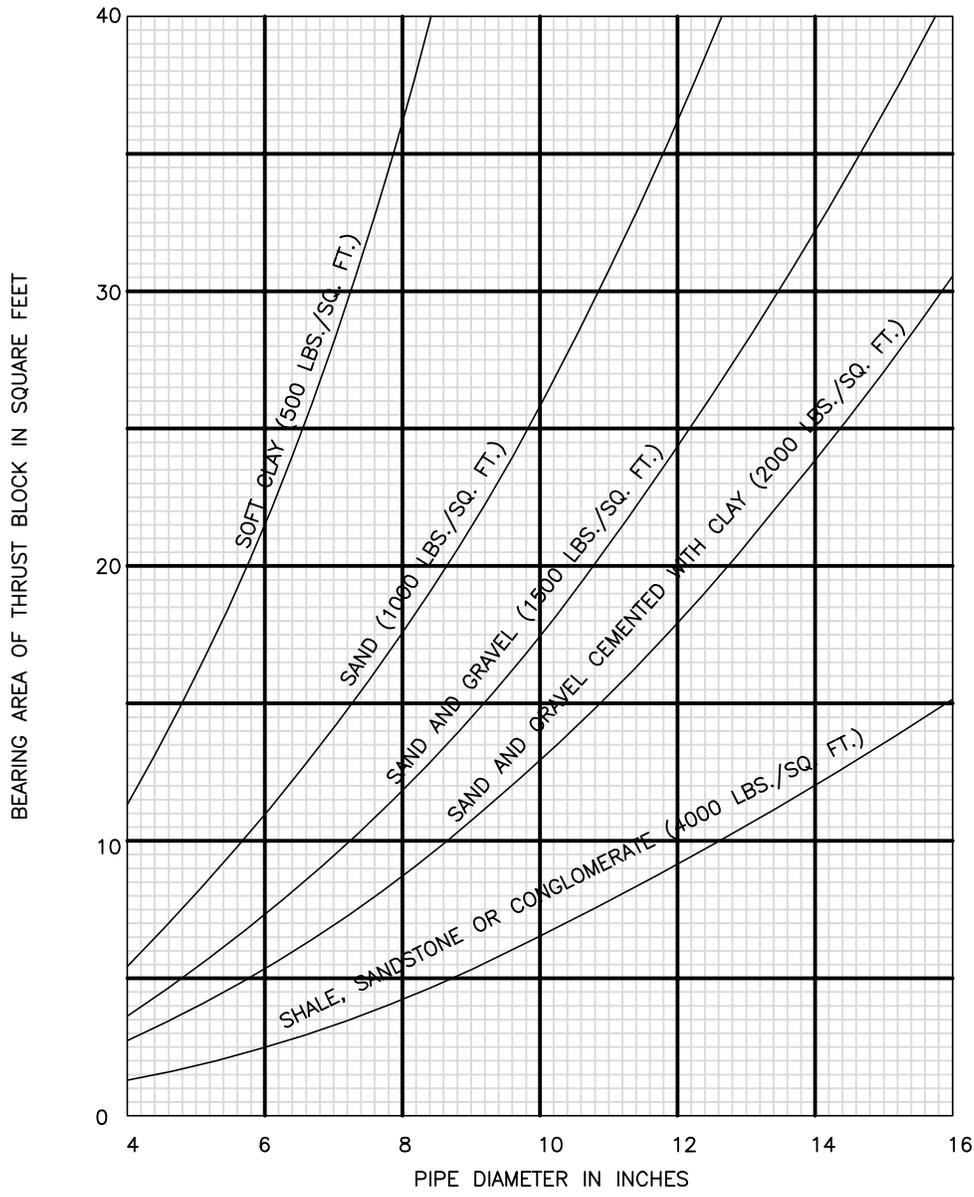


COACHELLA VALLEY WATER DISTRICT

**DETAIL OF
 CONCRETE THRUST BLOCKS**

APPROVAL DATE: 09/18

DRAWING NUMBER: W-19/S-19



NOTES:

1. BASED ON A 225 PSI TEST PRESSURE AND BEARING VALUES OF DRY SOILS.
2. VALUES FROM CURVES ARE FOR TEES AND DEAD ENDS I.E. STRAIGHT LINE THRUST.
 FOR 90° BENDS: 1.4 X VALUE FROM CURVE.
 FOR 45° BENDS: 0.8 X " " "
 FOR 22-1/2° 0.4 X " " "
3. FOR CONDITIONS NOT COVERED BY CURVES, THRUST DEVICES MUST BE APPROVED BY THE ENGINEER.
4. FOR LOCATION OF THRUST BLOCKS SEE STD. DRAWING W-19/S-19.
5. CONCRETE THRUST BLOCKS SHALL BE CONSTRUCTED OF 420-B-2000 CONCRETE.

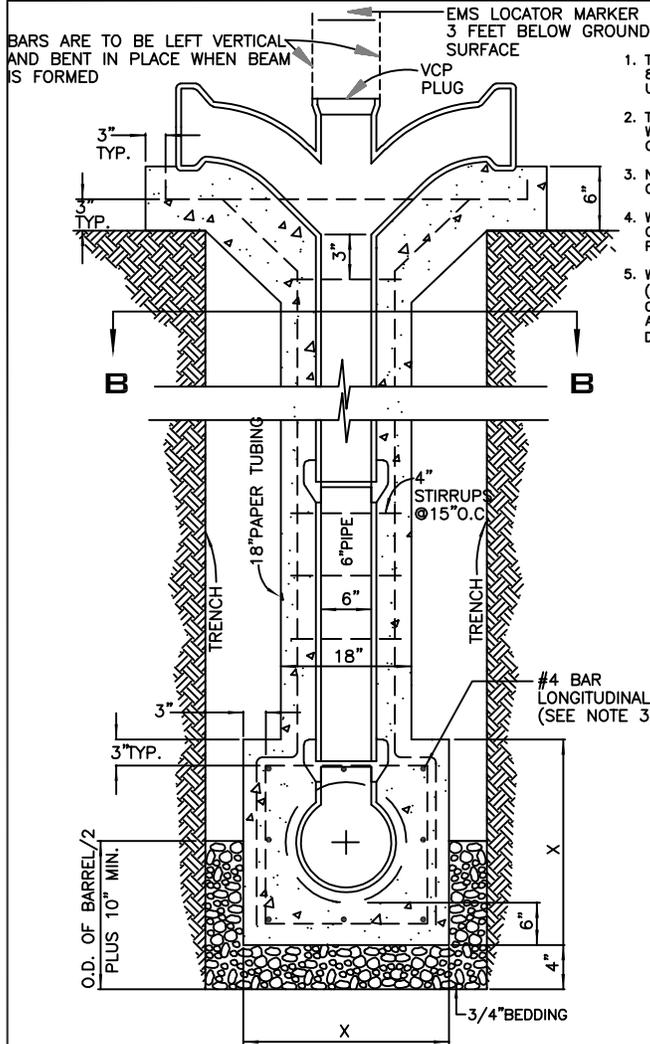


COACHELLA VALLEY WATER DISTRICT

THRUST BLOCK BEARING AREAS

APPROVAL DATE: 09/18

DRAWING NUMBER: W-20/S-20



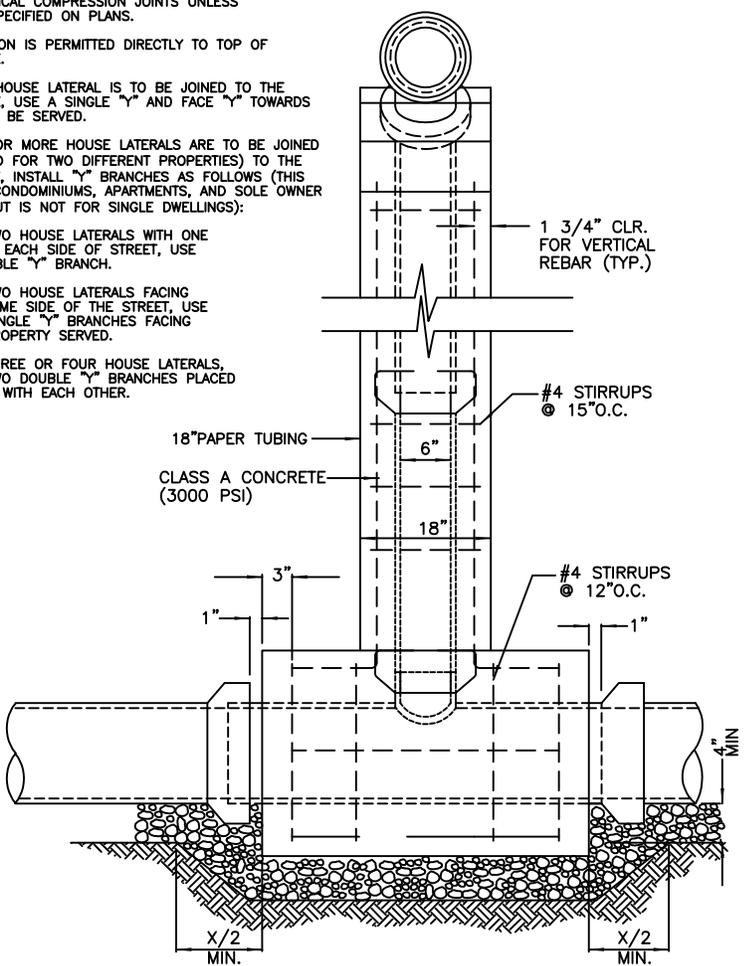
SECTION A-A

- NOTES**
1. THE UPPER END OF THE CHIMNEY PIPE SHALL BE 8 FEET BELOW THE GRADE OF THE LOWER CURB UNLESS OTHERWISE SPECIFIED.
 2. THE CHIMNEY PIPE SHALL BE VITRIFIED CLAY PIPE WITH MECHANICAL COMPRESSION JOINTS UNLESS OTHERWISE SPECIFIED ON PLANS.
 3. NO CONNECTION IS PERMITTED DIRECTLY TO TOP OF CHIMNEY PIPE.
 4. WHERE ONE HOUSE LATERAL IS TO BE JOINED TO THE CHIMNEY PIPE, USE A SINGLE "Y" AND FACE "Y" TOWARDS PROPERTY TO BE SERVED.
 5. WHERE TWO OR MORE HOUSE LATERALS ARE TO BE JOINED (NOT ALLOWED FOR TWO DIFFERENT PROPERTIES) TO THE CHIMNEY PIPE, INSTALL "Y" BRANCHES AS FOLLOWS (THIS APPLIES TO CONDOMINIUMS, APARTMENTS, AND SOLE OWNER DUPLEXES, BUT IS NOT FOR SINGLE DWELLINGS):

FOR TWO HOUSE LATERALS WITH ONE FACING EACH SIDE OF STREET, USE A DOUBLE "Y" BRANCH.

FOR TWO HOUSE LATERALS FACING THE SAME SIDE OF THE STREET, USE TWO SINGLE "Y" BRANCHES FACING THE PROPERTY SERVED.

FOR THREE OR FOUR HOUSE LATERALS, USE TWO DOUBLE "Y" BRANCHES PLACED AT 30" WITH EACH OTHER.

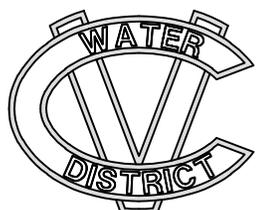


SECTION B-B

GENERAL NOTES

1. THE FITTING SHALL BE A MINIMUM OF FIVE (5) FEET IN LENGTH WITH THE TEE APPROXIMATELY CENTERED.
2. ALL REBARS ARE #4 BARS AND SHALL BE FABRICATED AND PLACED IN POSITION PER A.C.I. SPECIFICATION.
3. FOR MAINLINE ENCASEMENT USE 8-#4 BARS EQUALLY SPACED FOR PIPE EQUAL TO OR LARGER THAN 15" DIA.
OR
USE 4-#4 LONGITUDINAL BARS EQUALLY SPACED FOR PIPE SMALLER THAN 15" DIA.

MAINLINE PIPE DIA.	X
8"	22"
10"	25"
12"	27"
15"	31"
18"	34"

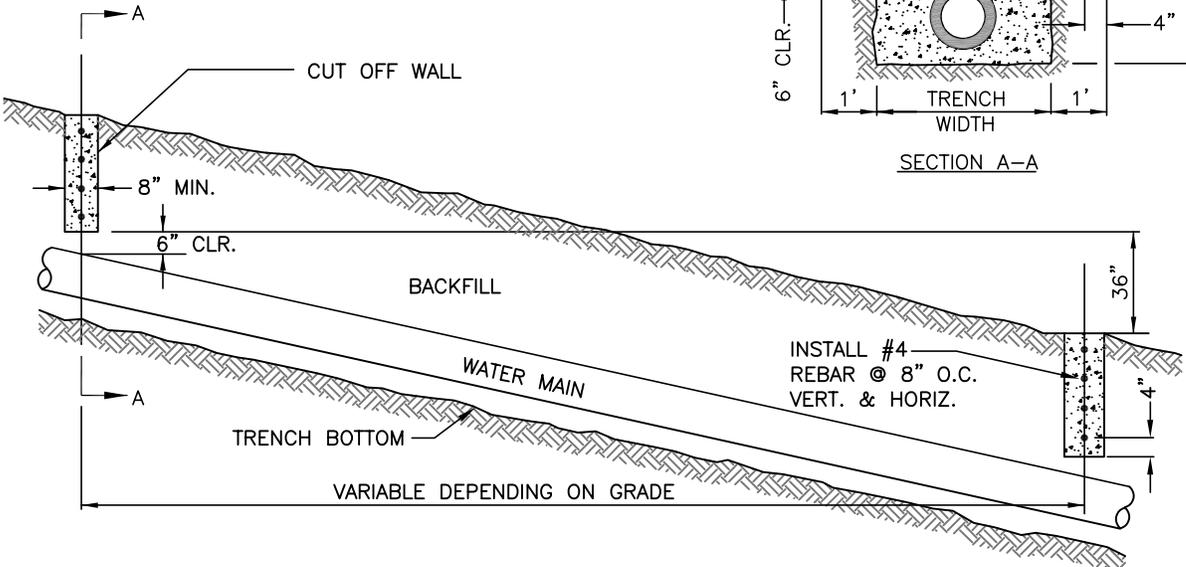
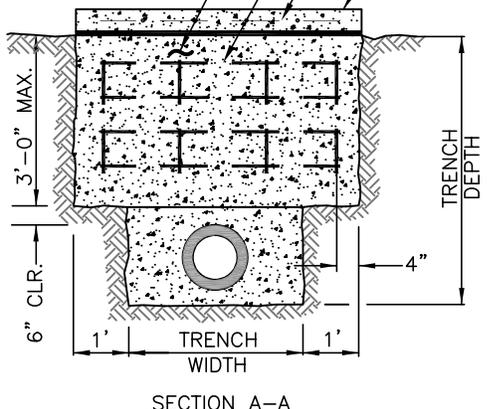
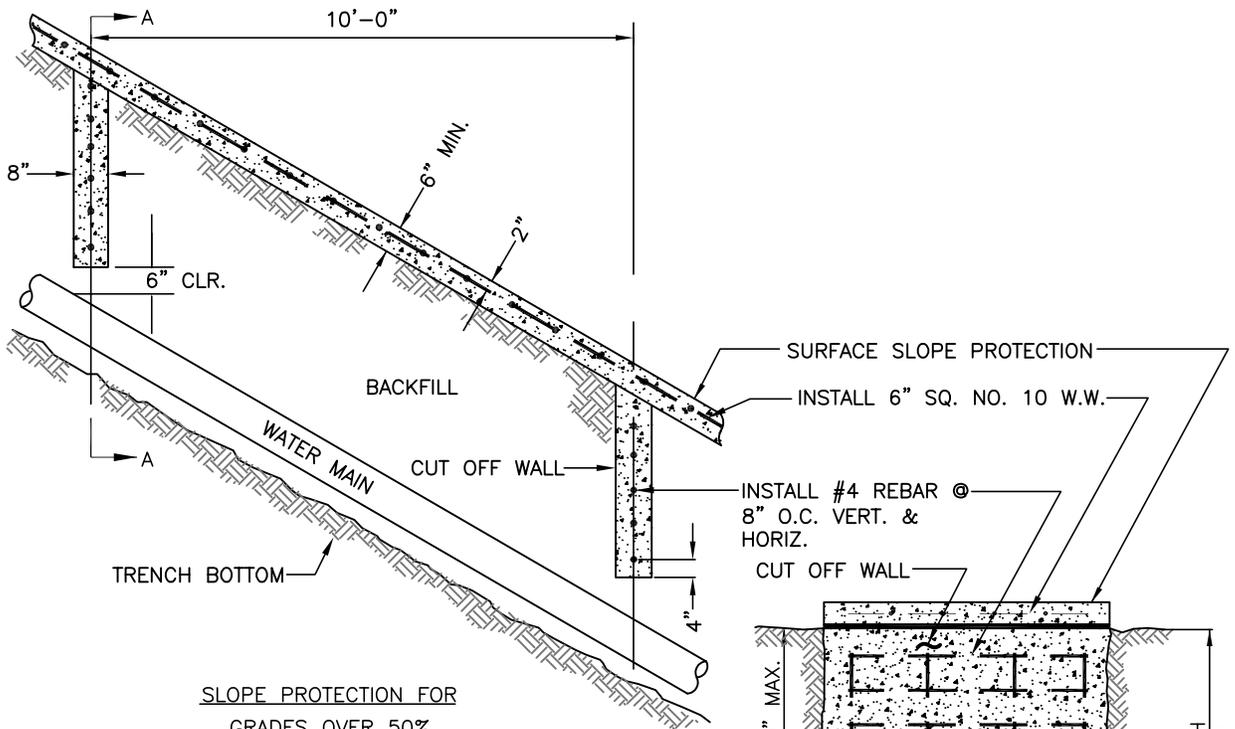


COACHELLA VALLEY WATER DISTRICT

CHIMNEY PIPE AND BASE

APPROVAL DATE: 09/18

DRAWING NUMBER: S-24



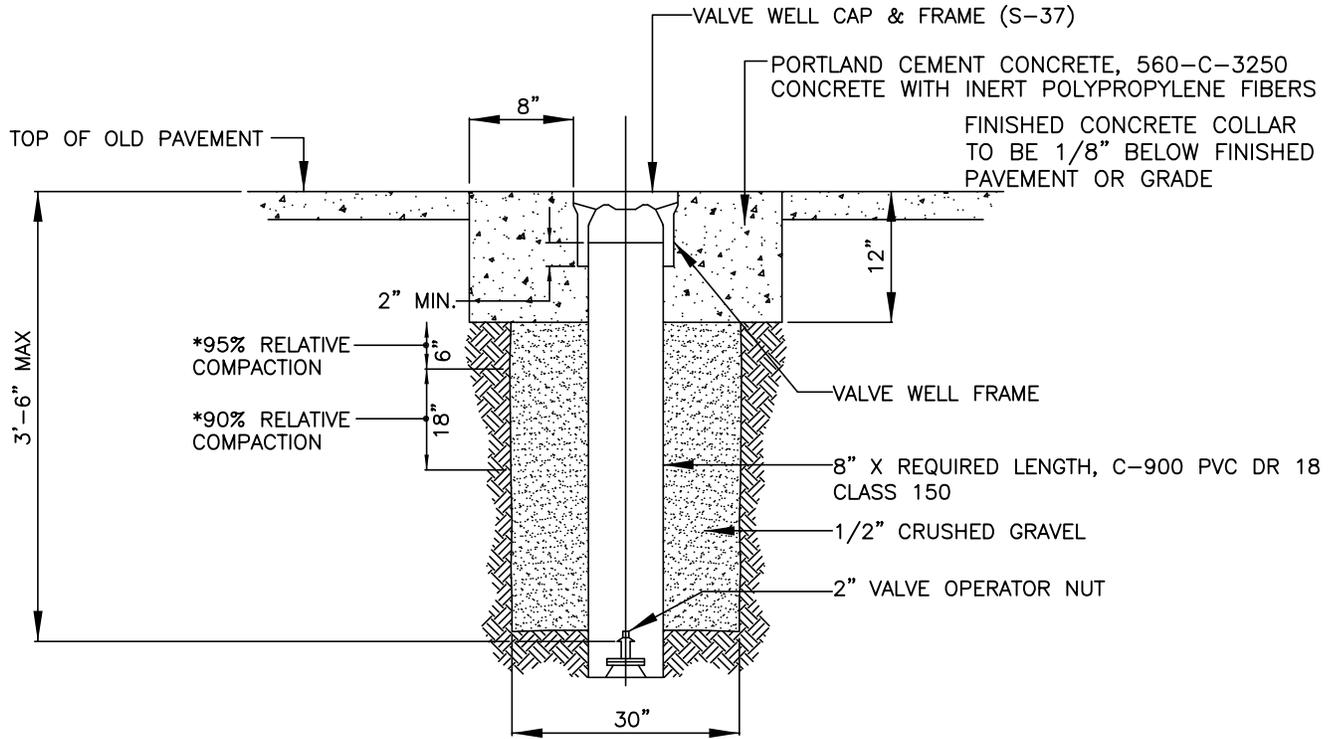
COACHELLA VALLEY WATER DISTRICT

DETAIL OF SLOPE PROTECTION

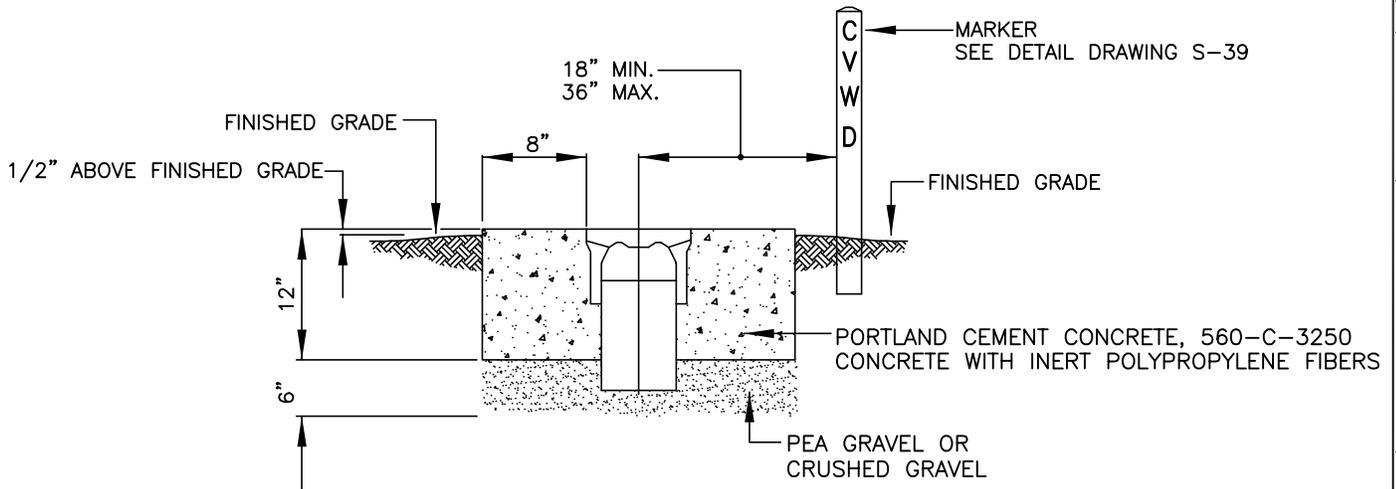
APPROVAL DATE: 09/18

DRAWING NUMBER: W-26/S-26

TYPICAL INSTALLATION (STREET OR ALLEY)



**TYPICAL INSTALLATION
PAVED AREA**

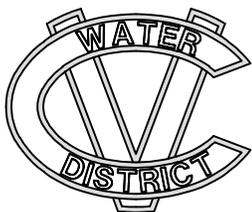


**TYPICAL INSTALLATION
UNPAVED AREAS**

NOTE:

WHERE VALVE OPERATING NUT IS GREATER THAN 48" BELOW THE SURFACE AN EXTENSION ROD FOR VALVE OPERATION, WITH ATTACHED CIRCULAR CENTERING GUIDE, SHALL BE REQUIRED. THE TOP OF THE EXTENSION ROD SHALL BE MIN. 24" AND MAX. 48" BELOW THE SURFACE.

FOR VALVE OPERATOR WELL CAP & FRAME SEE DETAIL DRAWING S-37
FOR MARKER SEE DETAIL DRAWING S-39

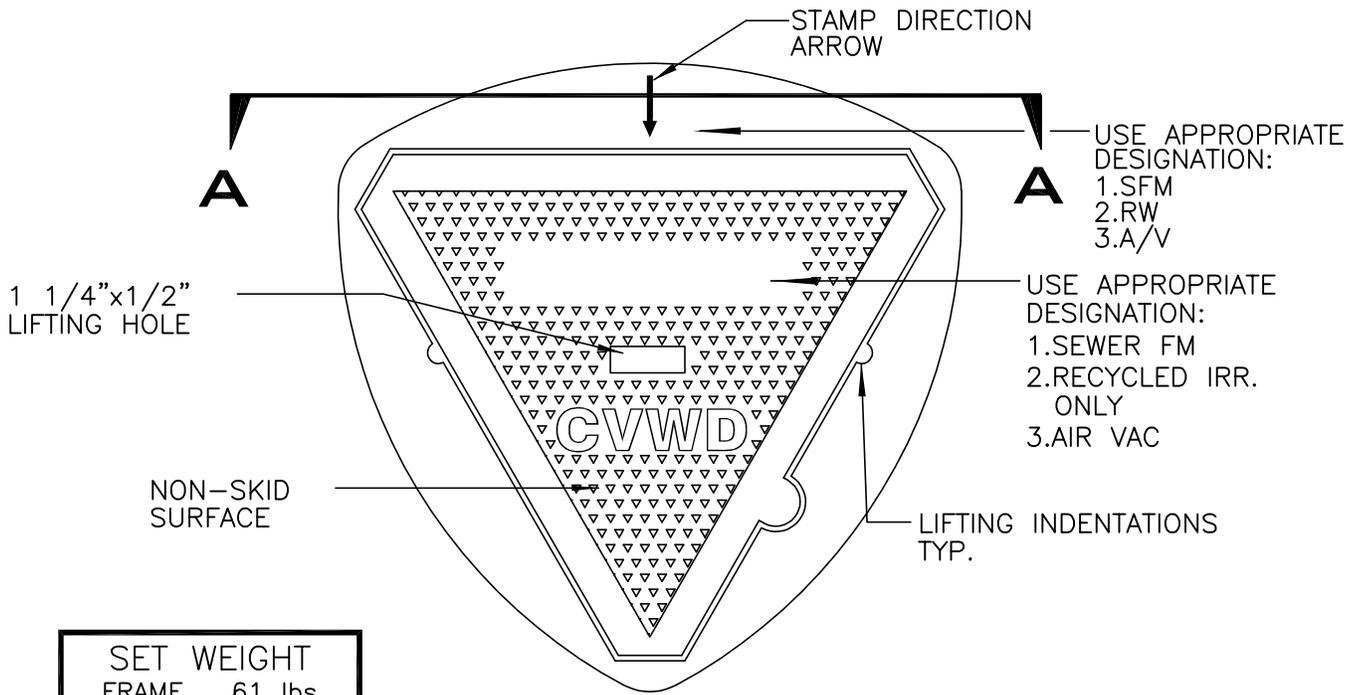


COACHELLA VALLEY WATER DISTRICT

**DETAIL OF
SEWER FORCE MAIN
VALVE OPERATOR
WELL INSTALLATION**

APPROVAL DATE: 03/25

DRAWING NUMBER: **S-36**

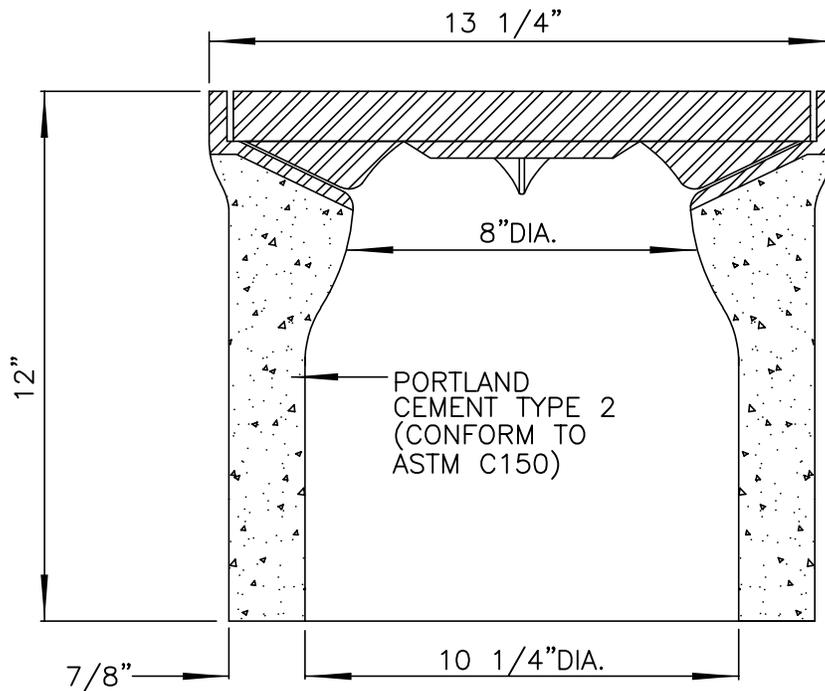


USE APPROPRIATE DESIGNATION:
 1.SFM
 2.RW
 3.A/V

USE APPROPRIATE DESIGNATION:
 1.SEWER FM
 2.RECYCLED IRR. ONLY
 3.AIR VAC

SET WEIGHT	
FRAME	61 lbs
LID	15 lbs
TOTAL	76 lbs

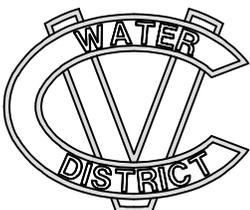
PLAN VIEW



NOTES:

1. ALL METALLIC MATERIALS SHALL BE CAST IRON OR DUCTILE IRON
2. FRAME AND LID SHALL HAVE CAST SEAT AND SIDE TO ASSURE CLOSE FIT.
3. CASTING SHALL BE DIPPED IN BLACK BITUMINOUS PAINT.
4. FOR INSTALLATION, SEE DETAIL DRAWING S-36.
5. FRAME AND LID SHALL EQUAL OR EXCEED H-20 WHEEL LOADING.
6. APPROVED MODELS: REFERENCE LATEST CVWD APPROVED MATERIALS LIST
7. LID SHALL BE PAINTED IRVINE PURPLE NO. 74-R0-641 BY TNE MEC OR EQUAL IF USED FOR RECYCLED WATER SERVICE

SECTION A-A



COACHELLA VALLEY WATER DISTRICT

**DETAIL OF
 VALVE OPERATOR WELL CAP
 AND FRAME**

APPROVAL DATE: 02/25

DRAWING NUMBER: **S-37**

NOTES:

1. UTILITY MARKER LEGENDS

DOMESTIC WATER (VERTICAL ALIGNMENT)
"CAUTION WATER PIPELINE"

NON-POTABLE WATER (VERTICAL ALIGNMENT)
"CAUTION NON-POTABLE WATER"

SEWER (VERTICAL ALIGNMENT)
"CAUTION SEWER PIPELINE"

2. CALL BEFORE DIGGING (HORIZONTAL ALIGNMENT)

3. CVWD (760) 398-2651 (HORIZONTAL ALIGNMENT)

4. BRASS TAG 1-INCH MIN. DIA. STAMPED AS SHOWN WITH DISTANCE IN FEET, THE WORD "OFFSET" AND DIRECTION ARROW POINTING IN DIRECTION OF OFFSET. TO BE SECURED WITH ALUMINUM POP RIVET AND WASHER.

5. FACILITY TYPE ID (3-INCH LETTERS VERT.)

LEGEND

- BO = BLOW-OFF
- AV = AIR-VAC RELIEF VALVE
- GV = GATE VALVE
- PV = PRESSURE REGULATOR VALVE
- LV = LINE VALVE
- MH = MANHOLE
- CP = CATHODIC PROTECTION

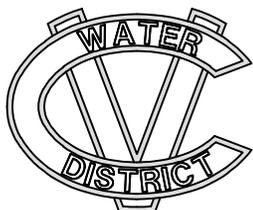
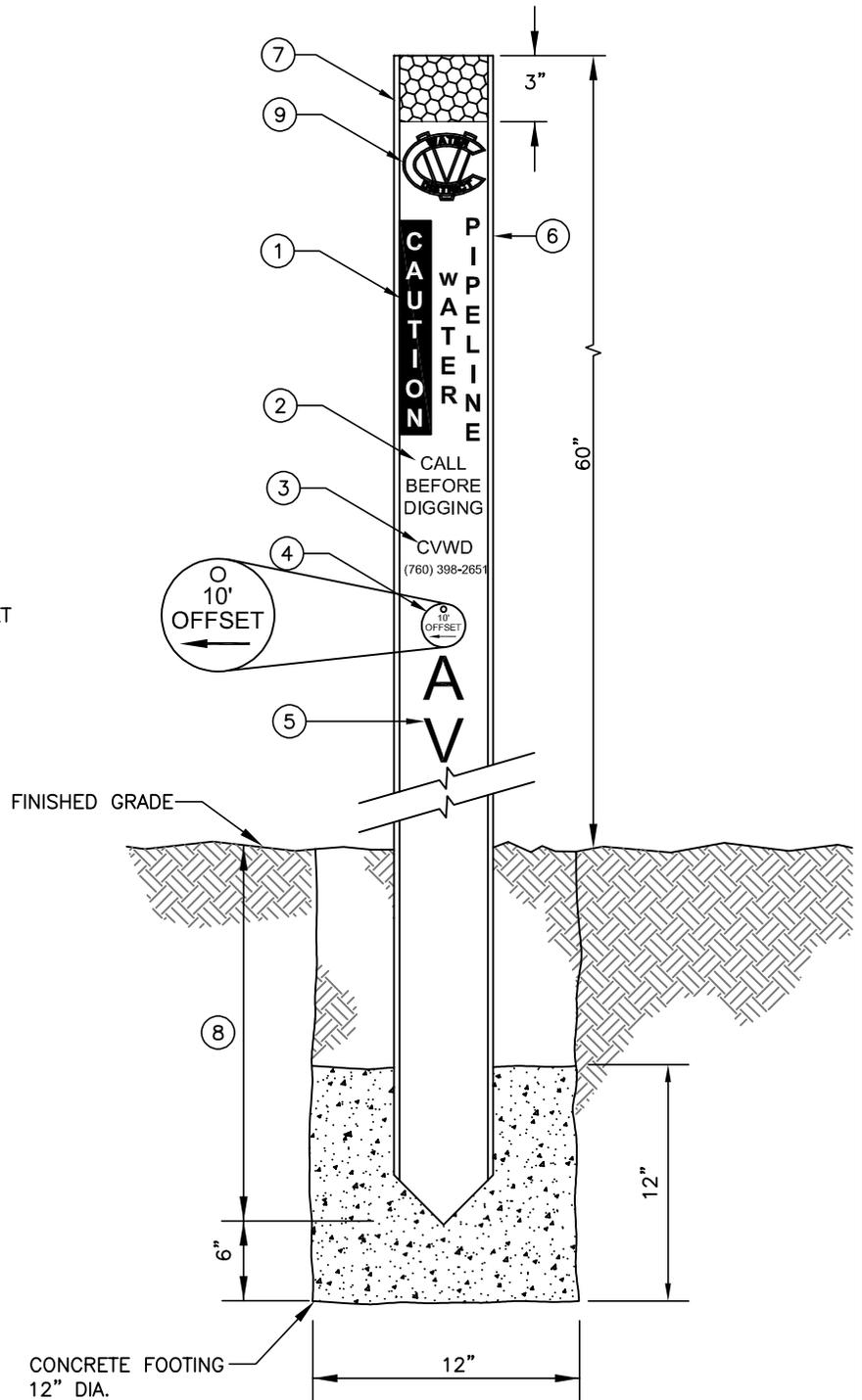
6. UTILITY MARKER POST COLOR

- DOMESTIC WATER = BLUE
- SEWER = GREEN
- NON-POTABLE = PURPLE

7. REFLECTIVE SHEETING SHALL BE HIGH INTENSITY GRADE AND 3-INCHES WIDE.

8. INSTALLATION DEPTH PER MANUFACTURERS RECOMMENDATIONS.

9. CVWD LOGO

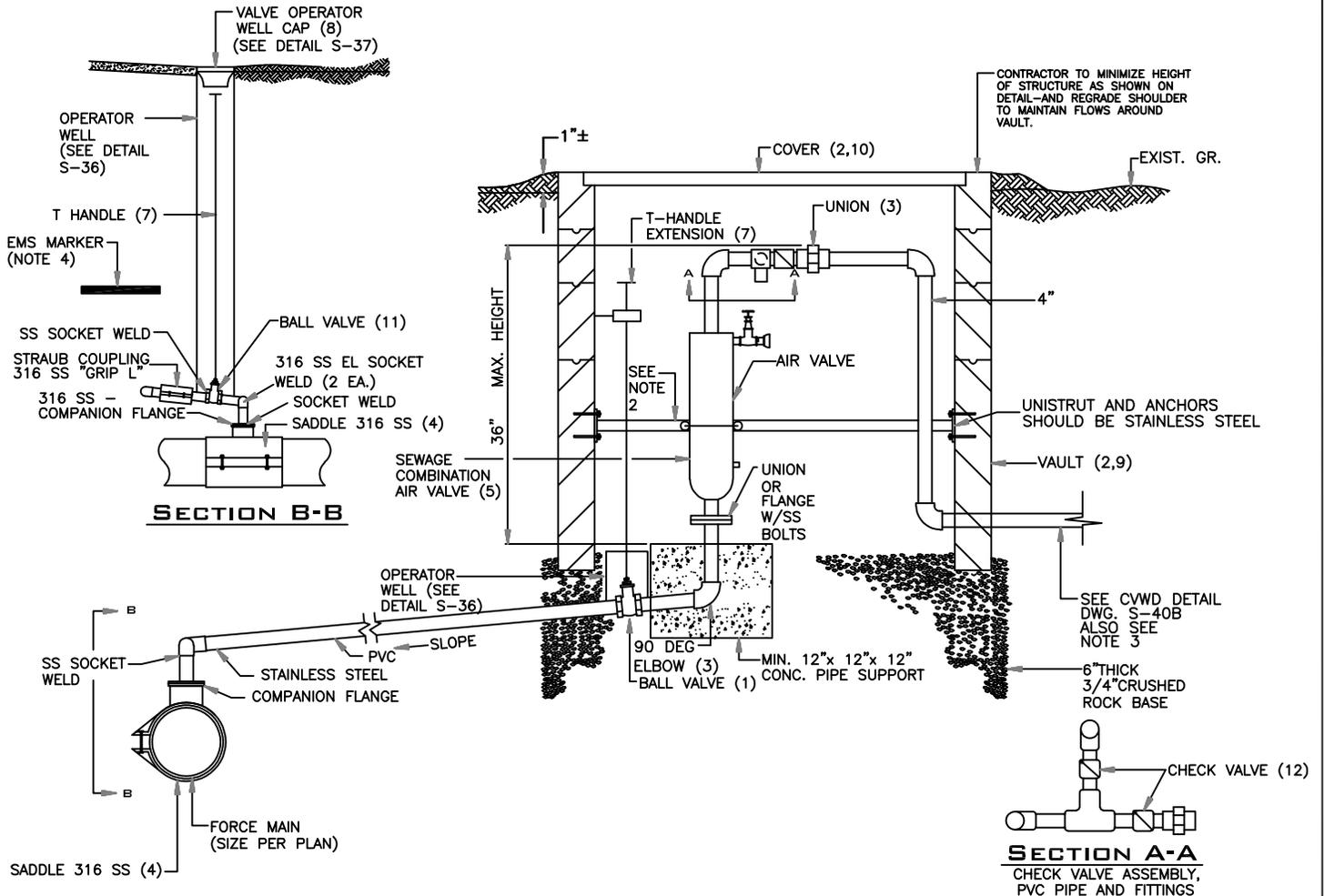


COACHELLA VALLEY WATER DISTRICT

UTILITY MARKER POST

APPROVAL DATE: 02/25

DRAWING NUMBER: W-27/S-38



MATERIAL SCHEDULE

- 1 BALL VALVE WITH SQUARE OPERATING NUT, BURIED
- 2 COVER AND VAULT INTERIOR
- 3 PIPE AND FITTINGS
- 4 TAPPED REPAIR CLAMP OR TAPPING SLEEVE
- 5 SEWAGE COMBINATION AIR VALVE, TRIM AND HARDWARE
- 6 SWING JOINT ASSEMBLY
- 7 T-HANDLE
- 8 VALVE OPERATOR WELL CAP
- 9 VAULT
- 10 VAULT COVER
- 11 BALL VALVE WITH SQUARE OPERATING NUT, BURIED
- 12 CHECK VALVE

304 STAINLESS STEEL OR PVC, INDUSTRIAL DUTY, FOR BURIED CORROSIVE SERVICE, AND CAPTIVE T-HANDLE EXTENSION, AS SHOWN.
 COAT ENTIRE INTERIOR INCLUDING UNDERSIDE OF COVER WITH 50 MIL HIGH-BUILD POLYURETHANE (SANCON OR APPROVED EQUAL)
 SCHEDULE 80 PVC, SOLVENT WELD OR THREADED, 225 PSI MINIMUM OPERATING PRESSURE
 ALL STAINLESS STEEL TYPE 316, FULL CIRCLE TYPE WITH FULL GASKET, 12" MIN. BAND/SLEEVE LENGTH, THREE (3) OR MORE BOLTS ON EACH SIDE OF TAPPING SLEEVE. 4" DIA. AND LARGER SHALL BE FLANGED (316 SS). 316 SS HARDWARE.
 STAINLESS STEEL VENT-O-MAT 050RGX1021 W/TOP OUTLET OR A.R.I. D-020 (SIZE PER PLAN)
 SCHEDULE 80 TYPE 316 STAINLESS STEEL WELDED
 STAINLESS STEEL, SHALL BE MARKED OR TAGGED "1/4 TURN OFF"
 SEE C.V.W.D. STANDARD DETAIL S-37
 BROOKS 4'-6" X 6'-6" CONCRETE OR EQUAL VAULT
 H20 GALVANIZED 2 PIECE STEEL COVER WITH SUPPORT BEAM
 304 STAINLESS STEEL WITH CAPTIVE T-HANDLE EXTENSION AS SHOWN
 ALL 316 STAINLESS STEEL OR PVC SWING CHECK VALVE (OUTSIDE LEVER AND WEIGHT OR SPRING)

NOTES

- 1. ALL ITEMS REQUIRE APPROVAL BY CVWD PROJECT ENGINEER BEFORE INSTALLATION
- 2. SECURE WITH STRUT AND U-BOLT, GALVANIZED. USE 3/8" STAINLESS STEEL HILTI QUICK STUDS, 2 EA. AT WALL FACE. STRUT MAY BE COATED AFTER INSTALLATION.
- 3. DISCHARGE TO ADJACENT SEWER MANHOLE MAY BE PERMITTED WITH CVWD APPROVAL.
- 4. PLACE EMS MARKER OVER MAIN BETWEEN 2 AND 3 FEET IN DEPTH AS SHOWN.
- 5. THE DIAMETER OF THE PIPING AND APPURTENANCES SHALL BE THE SAME SIZE OR LARGER THAN THE SPECIFIED SIZE OF THE AIR RELEASE AND AIR/VAC ASSEMBLY.
- 6. THE SIZE OF THE AIR RELEASE AND AIR/VAC ASSEMBLIES ARE IDENTIFIED ON THE PLANS OR SPECIFICATIONS.
- 7. INSTALL TRACER WIRE AND IDENTIFICATION AND LOCATOR TAPE AS SHOWN ON THE PLANS OR IN THE SPECIFICATIONS.
- 8. INSTALL UTILITY MARKER PER STANDARD DRAWING No. S-38

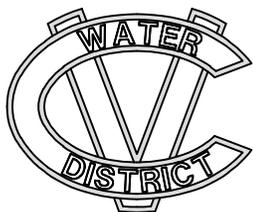
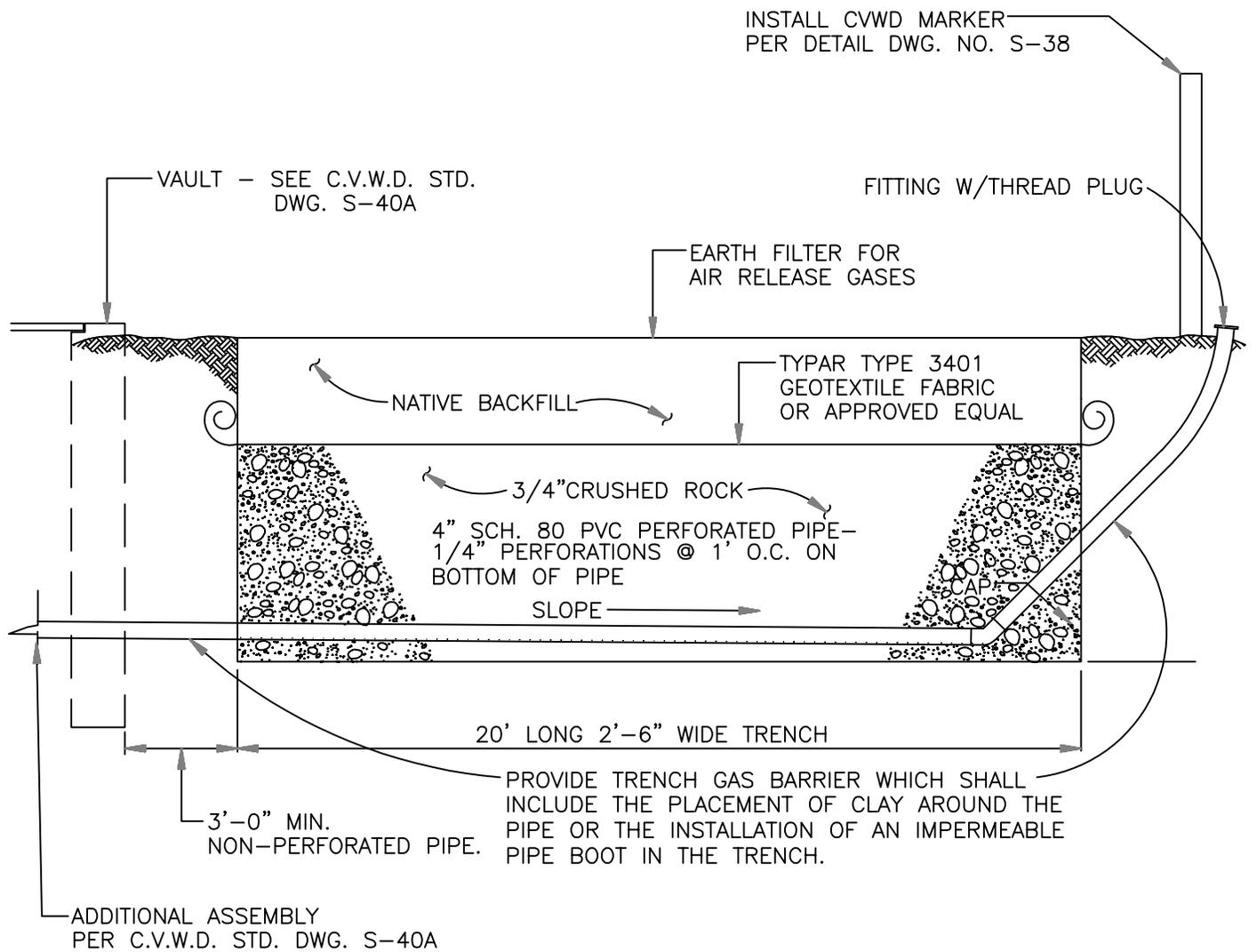


COACHELLA VALLEY WATER DISTRICT

**DETAIL OF
 OFFSET SEWAGE FORCE MAIN
 AIR RELEASE & AIR/VAC ASSEMBLY**

APPROVAL DATE: 02/25

DRAWING NUMBER: S-40A



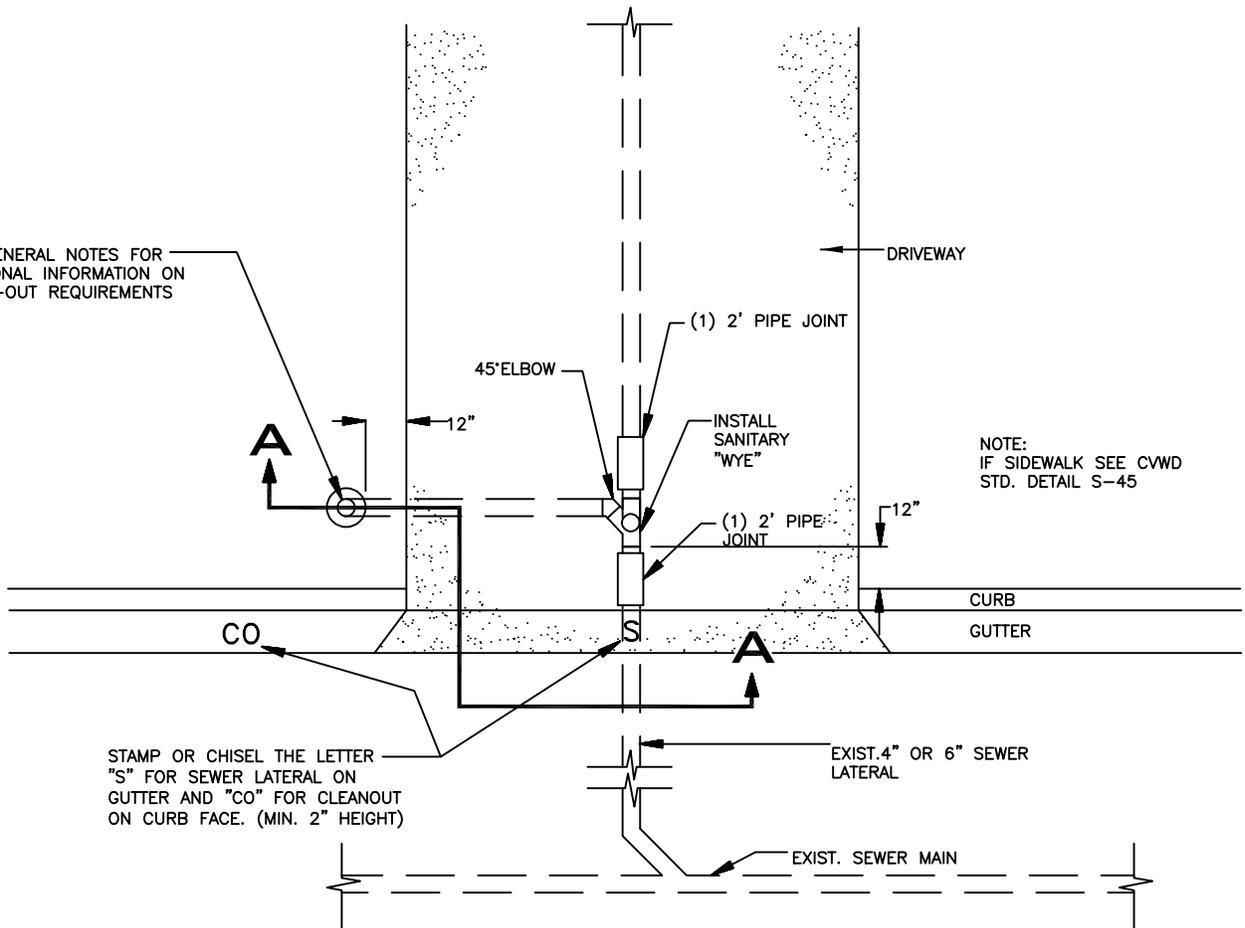
COACHELLA VALLEY WATER DISTRICT

DETAIL OF
AIR RELEASE AND
AIR VACUUM ASSEMBLY DISCHARGE

APPROVAL DATE: 02/25

DRAWING NUMBER: S-40B

SEE GENERAL NOTES FOR
ADDITIONAL INFORMATION ON
CLEAN-OUT REQUIREMENTS



NOTE:
IF SIDEWALK SEE CWWD
STD. DETAIL S-45

STAMP OR CHISEL THE LETTER
"S" FOR SEWER LATERAL ON
GUTTER AND "CO" FOR CLEANOUT
ON CURB FACE. (MIN. 2" HEIGHT)

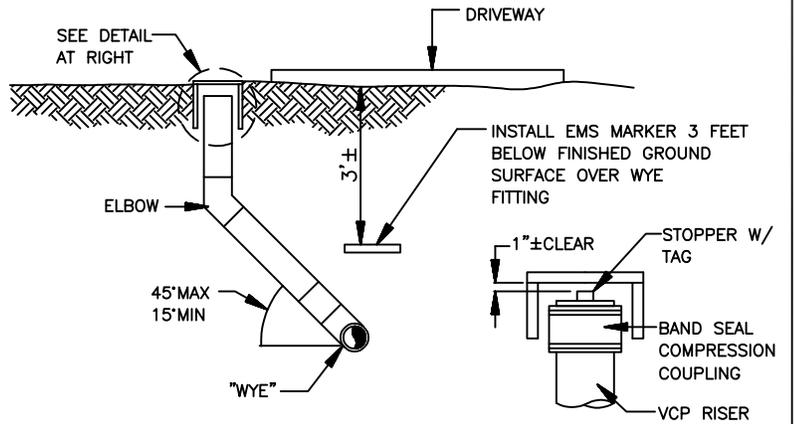
PLAN VIEW
N.T.S.

GENERAL NOTES

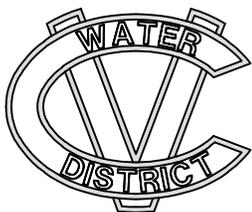
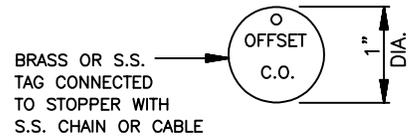
1. THE CLEAN-OUT SHALL BE THE SAME SIZE AS THE SEWER LATERAL.
2. THE WYE SHALL BE LOCATED 12 INCHES BEHIND THE CURB.
3. THE CLEAN-OUT SHALL BE CONSTRUCTED ON EITHER SIDE OF THE DRIVEWAY, APPROXIMATELY 12 INCHES BEHIND THE CURB.
4. THE CLEAN-OUT SHALL BE LOCATED ON EITHER SIDE OF THE DRIVEWAY AND SHALL BE CONSTRUCTED AS SHOWN ON THIS DRAWING AND BE PROTECTED AS REQUIRED IN CASES A THRU B

CASES

- A. CLEAN-OUTS LOCATED IN GREENBELT AREA SHALL BE PROTECTED BY A STANDARD CLEAN-OUT COVER AT GRADE. PER STANDARD DRAWING NO. S-6
- B. CLEAN-OUTS LOCATED IN PLANTER AREAS SHALL BE RAISED 3-INCHES ABOVE THE SURROUNDING GRADE.
5. THE TOTAL HORIZONTAL AND VERTICAL CHANGES IN DIRECTION SHALL NOT EXCEED 120 DEGREES.
6. THE SUBGRADE IMMEDIATELY BELOW THE WYE FITTING SHALL OBTAIN A 90 PERCENT COMPACTION OR BE BEDDED WITH 3/4-INCH GRAVEL.
7. MID-RANGE PIPE LOCATOR MARKERS SHALL BE 3M ELECTRICAL PRODUCTS DIVISION, SCOTCHMARK MARKET LOCATOR (EMS) MODEL NO. 1258, OR EQUIVALENT.



CROSS SECTION A-A DETAIL
N.T.S.

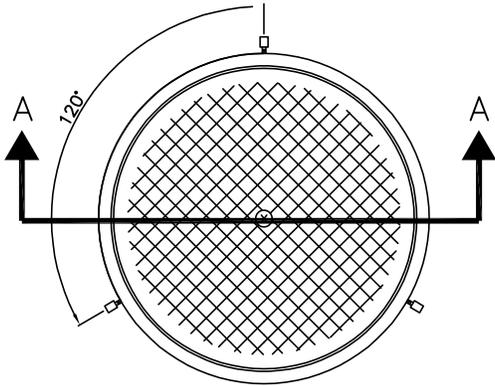


COACHELLA VALLEY WATER DISTRICT

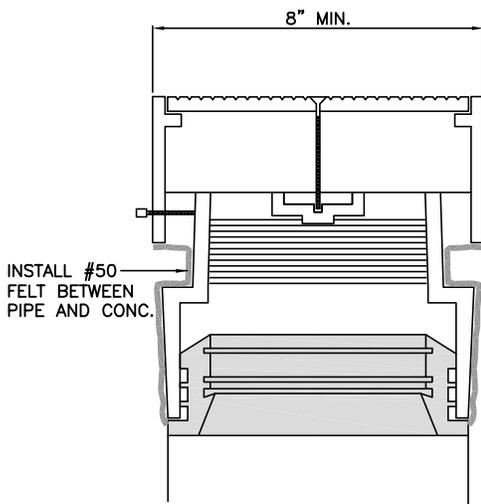
**STANDARD OFFSET CLEAN-OUT
DETAIL FOR LATERAL
UNDER DRIVEWAY WITH NO SIDEWALK**

APPROVAL DATE: 09/18

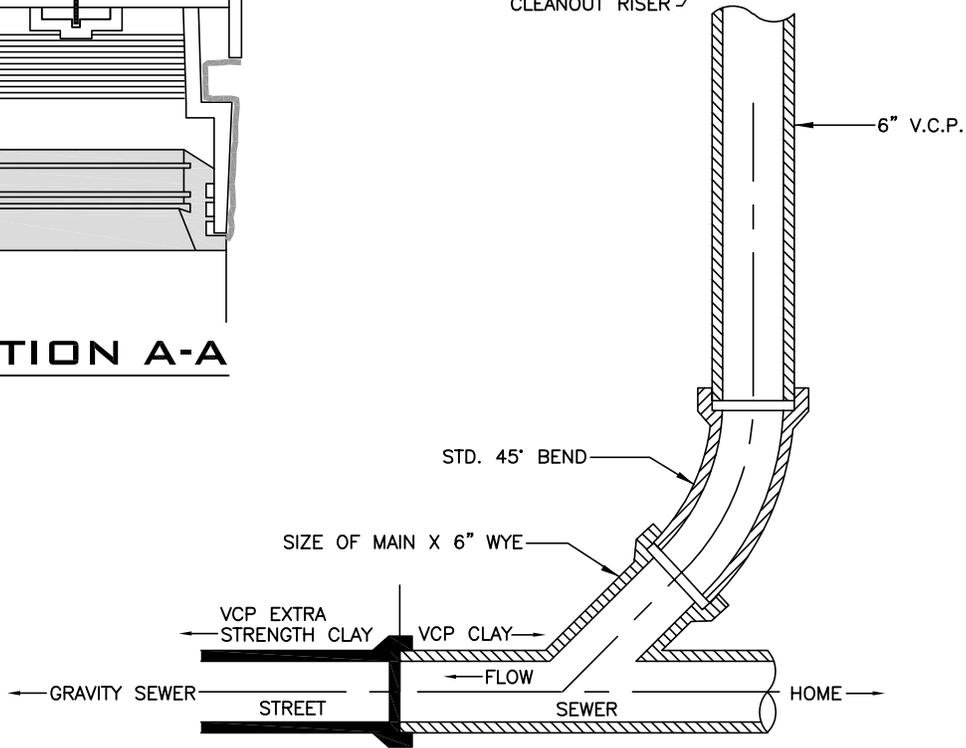
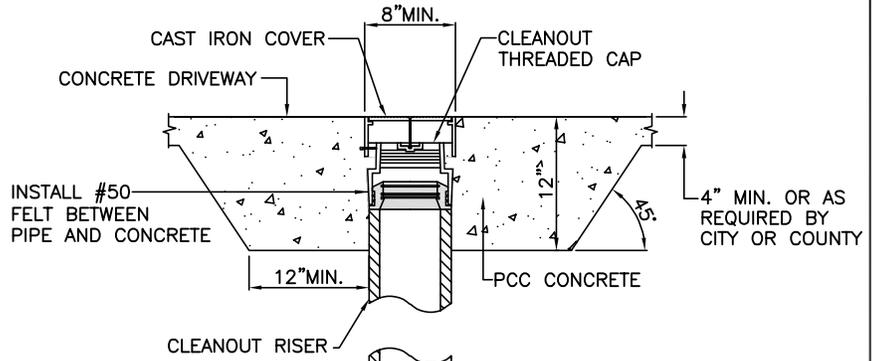
DRAWING NUMBER: S-44



PLAN VIEW

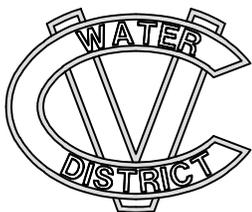


SECTION A-A



NOTE:

1. CONCRETE SHALL BE 520-C-2500
2. FINISH LINE ADJUSTABLE CLEAN-OUT (834 SERIES) OR APPROVED EQUAL
3. CLEANOUTS SHALL BE CAST IRON W/LOAD RATING GREATER THAN 10,000 PSI
4. CLEANOUTS SHALL BE ADJUSTED TO DRIVEWAY GRADE PRIOR TO DRIVEWAY CONCRETE POUR
5. MARK (S W/CO) ON TOP OF CURB



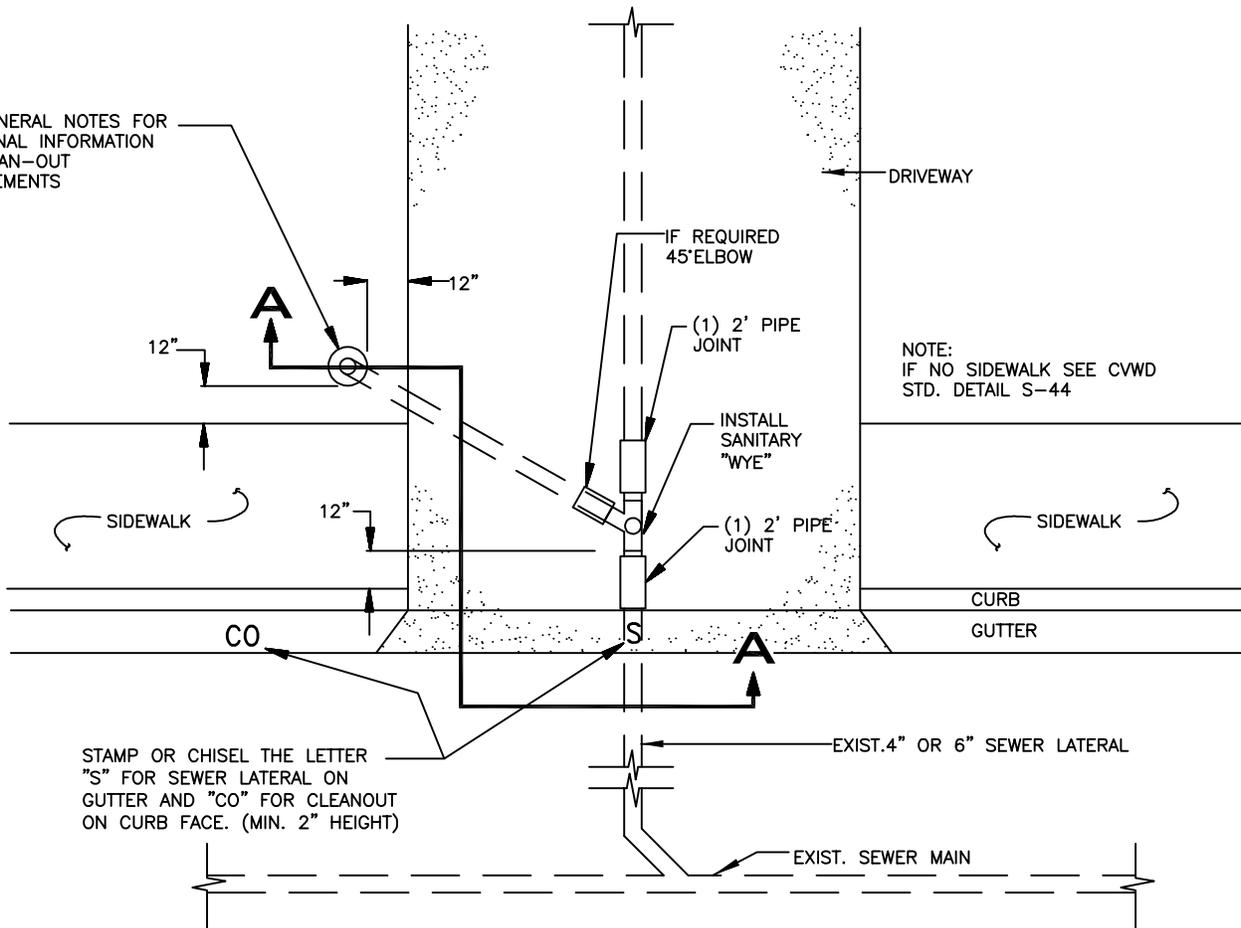
COACHELLA VALLEY WATER DISTRICT

**STANDARD CLEAN-OUT
IN DRIVEWAY**
(FOR USE ONLY IN CUL-DE-SAC AREAS)

APPROVAL DATE: 09/18

DRAWING NUMBER: S-44A

SEE GENERAL NOTES FOR ADDITIONAL INFORMATION ON CLEAN-OUT REQUIREMENTS



NOTE:
IF NO SIDEWALK SEE CVWD
STD. DETAIL S-44

STAMP OR CHISEL THE LETTER "S" FOR SEWER LATERAL ON GUTTER AND "CO" FOR CLEANOUT ON CURB FACE. (MIN. 2" HEIGHT)

PLAN VIEW

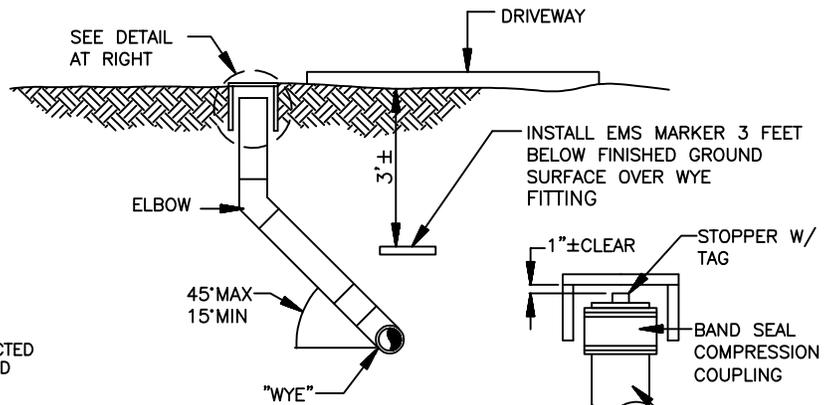
N.T.S.

GENERAL NOTES

1. THE CLEAN-OUT SHALL BE THE SAME SIZE AS THE SEWER LATERAL.
2. THE WYE SHALL BE LOCATED 12 INCHES BEHIND THE CURB.
3. THE CLEAN-OUT SHALL BE CONSTRUCTED ON EITHER SIDE OF THE DRIVEWAY, APPROXIMATELY 12 INCHES BEHIND THE SIDEWALK.
4. THE CLEAN-OUT SHALL BE LOCATED ON EITHER SIDE OF THE DRIVEWAY AND SHALL BE CONSTRUCTED AS SHOWN ON THIS DRAWING AND BE PROTECTED AS REQUIRED IN CASES A THRU B

CASES

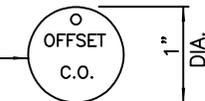
- A. CLEAN-OUTS LOCATED IN GREENBELT AREA SHALL BE PROTECTED BY A STANDARD CLEAN-OUT COVER AT GRADE. PER STANDARD DRAWING NO. S-6
 - B. CLEAN-OUTS LOCATED IN PLANTER AREAS SHALL BE RAISED 3 INCHES ABOVE THE SURROUNDING GRADE.
5. THE TOTAL HORIZONTAL AND VERTICAL CHANGES IN DIRECTION SHALL NOT EXCEED 120 DEGREES
 6. THE SUBGRADE IMMEDIATELY BELOW THE WYE FITTING SHALL OBTAIN A 90 PERCENT COMPACTION OR BE BEDDED WITH 3/4-INCH GRAVEL.
 7. MID-RANGE PIPE LOCATOR MARKERS SHALL BE 3M ELECTRICAL PRODUCTS DIVISION, SCOTCHMARK MARKET LOCATOR (EMS) MODEL NO. 1258, OR EQUIVALENT.



CROSS SECTION A-A DETAIL

N.T.S.

BRASS OR S.S. TAG CONNECTED TO STOPPER WITH S.S. CHAIN OR CABLE

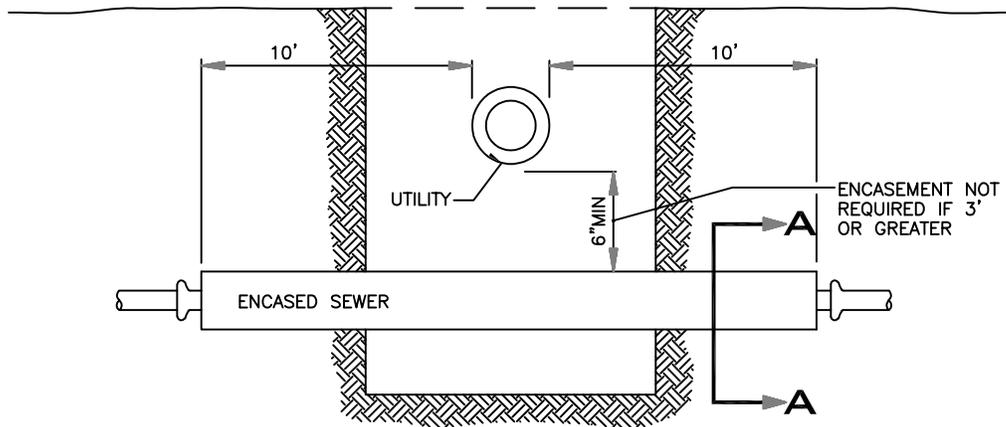


COACHELLA VALLEY WATER DISTRICT

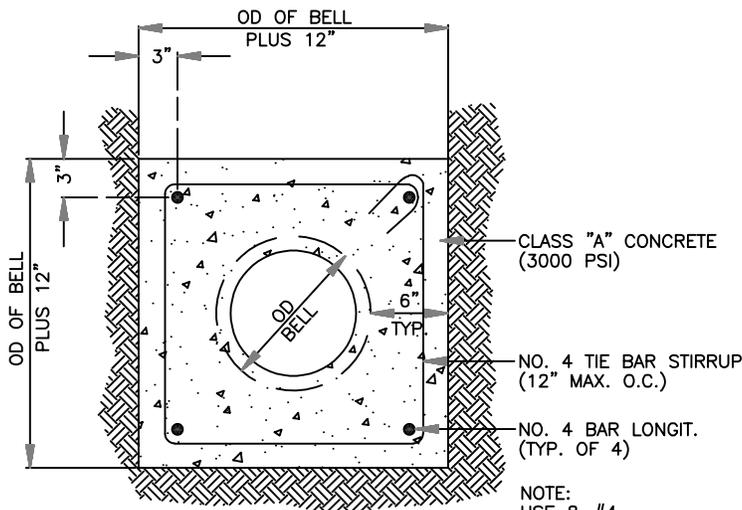
**STANDARD OFFSET CLEAN-OUT
DETAIL FOR LATERAL
UNDER DRIVEWAY WITH SIDEWALK**

APPROVAL DATE: 09/18

DRAWING NUMBER: **S-45**



ENCASEMENT NOT
REQUIRED IF 3'
OR GREATER



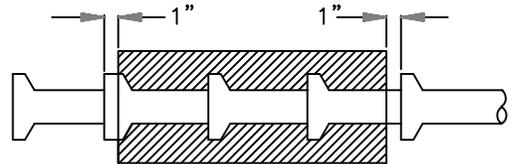
- CLASS "A" CONCRETE (3000 PSI)
- NO. 4 TIE BAR STIRRUP (12" MAX. O.C.)
- NO. 4 BAR LONGIT. (TYP. OF 4)

NOTE:
USE 8-#4
LONGITUDINAL BARS
EQUALLY SPACED FOR
PIPE LARGER THAN
15" Ø

SECTION A-A

GENERAL NOTES:

1. EXTEND BOTH ENDS OF CRADLE OR ENCASEMENT TO A POINT ONE INCH SHORT OF FIRST PIPE JOINT BEYOND LOCATIONS SPECIFIED ON PLAN.



2. APPLY FORM OIL, THIN PLASTIC SHEET, OR OTHER ACCEPTABLE MATERIAL TO PIPE TO PREVENT BOND BETWEEN PIPE AND CONCRETE.
3. USE CLASS A 3000 PSI CONCRETE
4. EXPANSION JOINTS MUST BE PLACED AT 20' INTERVALS, AT THE PIPE JOINT ON CONTINUOUS ENCASEMENT OR CRADLE.



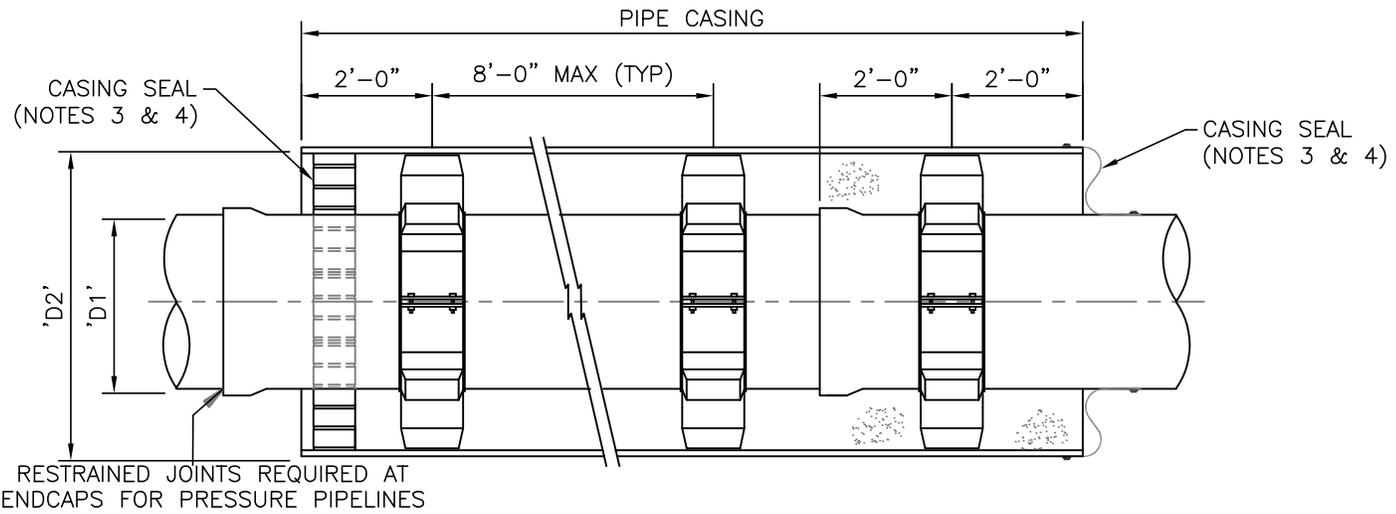
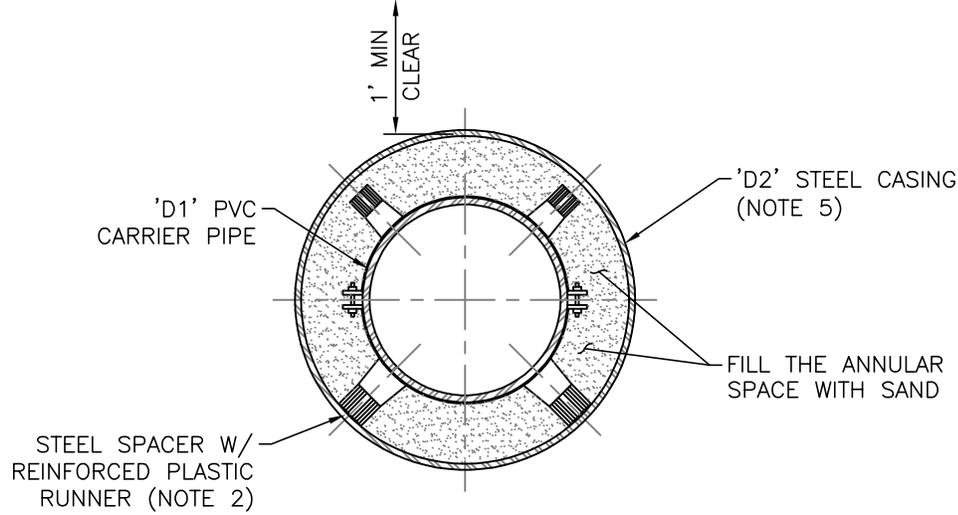
COACHELLA VALLEY WATER DISTRICT

CONSTRUCTION DETAIL FOR
STRUCTURAL ENCASEMENT OF DRAIN

APPROVAL DATE: 09/18

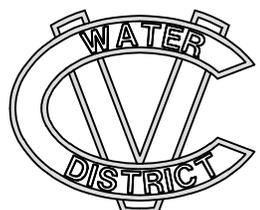
DRAWING NUMBER: S-46

EXISTING STRUCTURE OR FACILITY (WALL, CULVERT, PIPELINE, ETC.)



PIPE SIZES		
'D1' PVC CARRIER SIZE	'D2' STL CASING SIZE	'T' CASING THICKNESS
ø8"	ø18"	.75"
ø10"	ø24"	.75"
ø12"	ø24"	.75"
ø15"	ø30"	.75"
ø18"	ø30"	.75"
ø20"	ø36"	.75"
ø24"	ø36"	.75"
ø30"	ø42"	.75"
ø36"	ø48"	.75"
ø42"	ø60"	.844"

- NOTES:
1. USE BENTONITE AS REQUIRED TO REDUCE JACKING FORCE.
 2. FOR TYPE, NUMBER AND SPACING OF CASING RUNNERS, SEE SPECIFICATIONS. CONTACT CASING RUNNER MANUFACTURER. (MAY VARY FROM ILLUSTRATION).
 3. CARRIER PIPE SHALL BE TESTED BEFORE CASING IS SEALED.
 4. THE CASING ENDS SHALL BE SEALED WITH BRICK AND MORTAR BULKHEADS. RUBBER END SEALS MAY BE USED IF NOTED ON THE PLANS AND INCLUDED IN THE SPECIFICATIONS.
 5. CASING PIPE SHALL HAVE JOINTS WELDED FULL CIRCUMFERENCE. CASING SHALL BE JACKED AND BORED.



COACHELLA VALLEY WATER DISTRICT

**STEEL CASING/BORING DETAIL
FOR PVC GRAVITY SEWER MAIN**

APPROVAL DATE: 03/25

DRAWING NUMBER: S-47A



1' MIN CLEAR

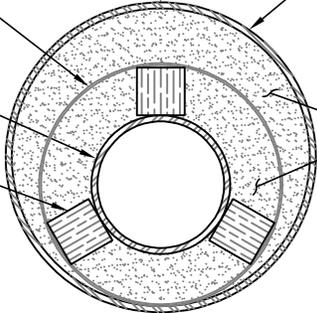
3/4"x0.45" STAINLESS STEEL BAND
(MINIMUM 3-BANDS PER SKID)

'D2' STEEL CASING PIPE
(NOTE 2)

'D1' VCP CARRIER PIPE

4"x4" REDWOOD SKIDS
X 4' LONG (TYP)

FILL THE ANNULAR SPACE
WITH SAND



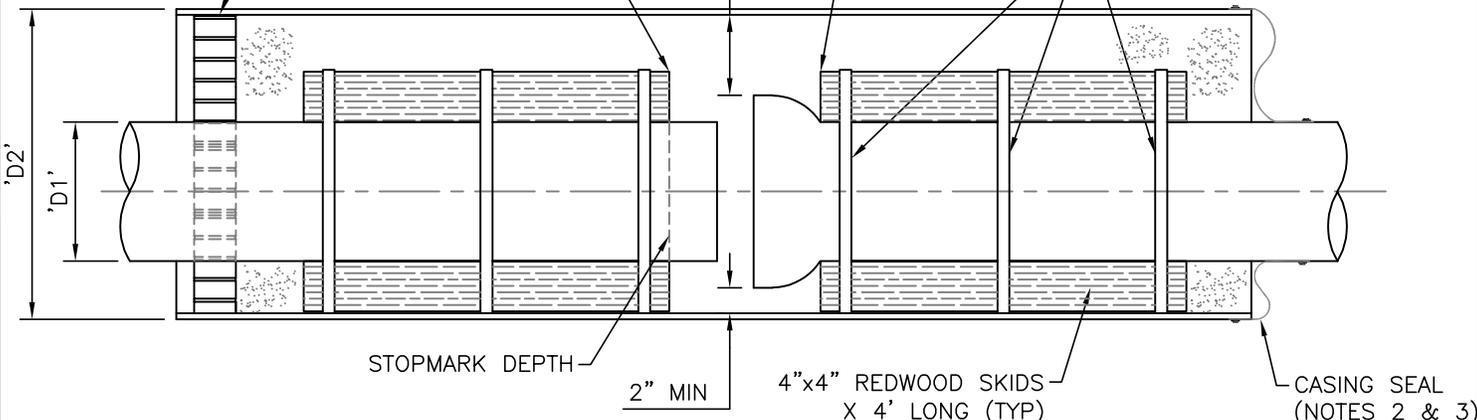
CASING SEAL
(NOTES 2 & 3)

END SKIDS AT
STOPMARK DEPTH

3" MIN

STOP SKIDS AT BELL

3/4"x0.45" STAINLESS
STEEL BANDS (TYP)



STOPMARK DEPTH

2" MIN

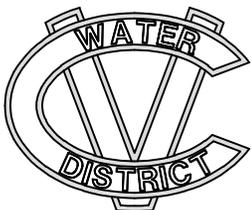
4"x4" REDWOOD SKIDS
X 4' LONG (TYP)

CASING SEAL
(NOTES 2 & 3)

PIPE SIZES		
'D1' PVC CARRIER SIZE	'D2' STL CASING SIZE	'T' CASING THICKNESS
ø8"	ø18"	.75"
ø10"	ø24"	.75"
ø12"	ø24"	.75"
ø15"	ø30"	.75"
ø18"	ø30"	.75"
ø20"	ø36"	.75"
ø24"	ø36"	.75"
ø30"	ø42"	.75"
ø36"	ø48"	.75"
ø42"	ø60"	.844"

NOTES:

1. USE BENTONITE AS REQUIRED TO REDUCE JACKING FORCE.
2. CARRIER PIPE SHALL BE TESTED BEFORE CASING IS SEALED.
3. THE CASING ENDS SHALL BE SEALED WITH BRICK AND MORTAR BULKHEADS. RUBBER END SEALS MAY BE USED IF NOTED ON THE PLANS AND INCLUDED IN THE SPECIFICATIONS.
4. CASING PIPE SHALL HAVE JOINTS WELDED FULL CIRCUMFERENCE. CASING SHALL BE JACKED AND BORED.



COACHELLA VALLEY WATER DISTRICT

**STEEL CASING/BORING DETAIL
FOR VCP GRAVITY SEWER MAIN**

APPROVAL DATE: 09/18

DRAWING NUMBER: S-47B